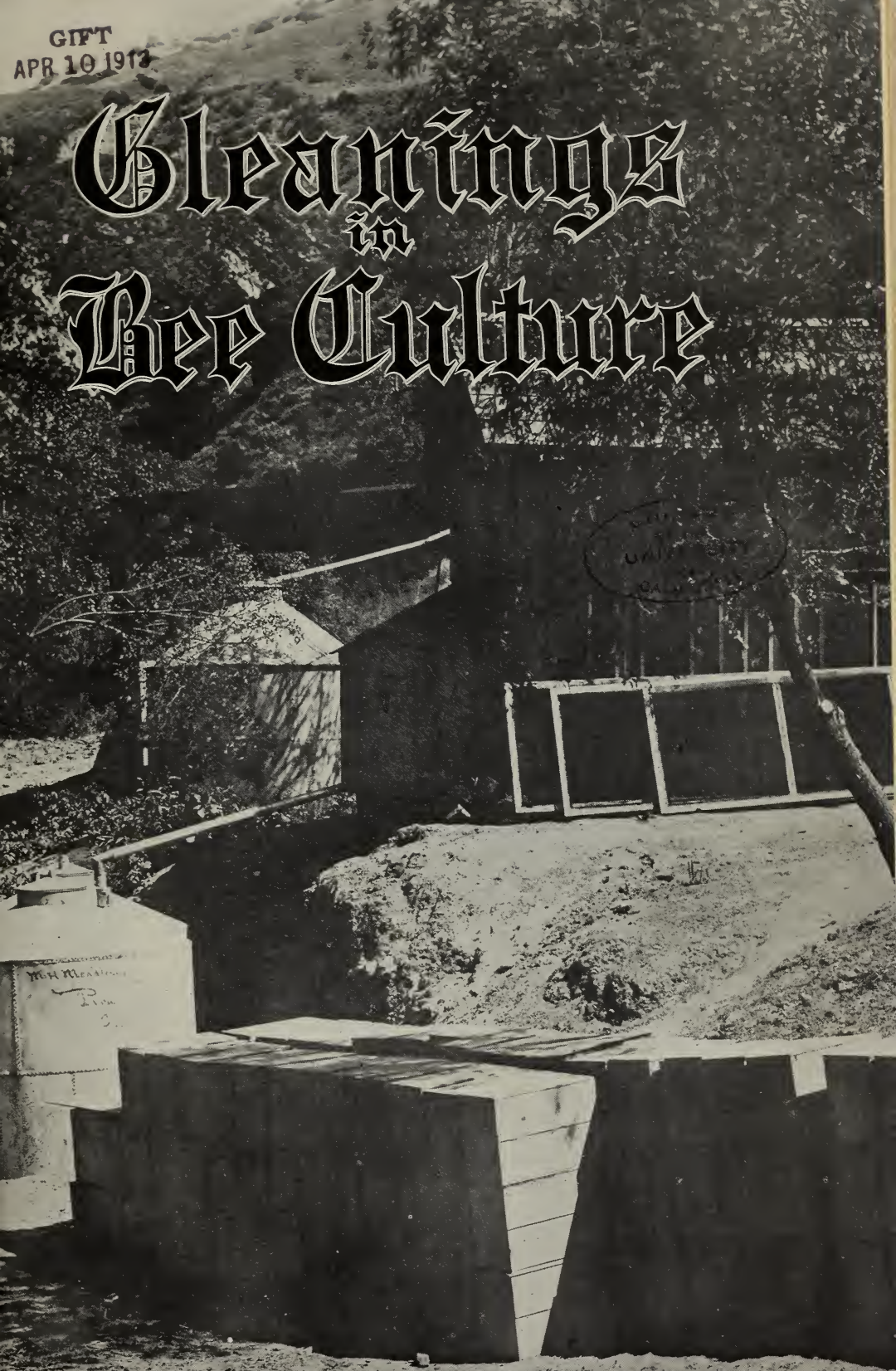
Gleanings in Bee Culture



VOL. XLI. APRIL 1, 1913, NO. 7.

Gleanings in Bee Culture

One Year

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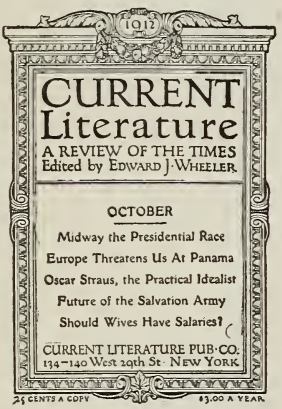

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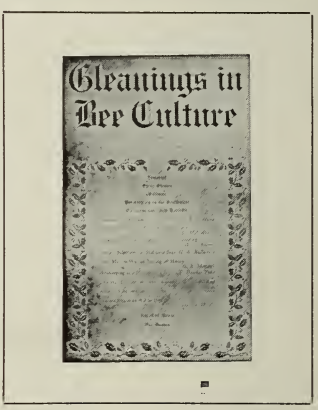

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Published by The A. I. Root Co., Medina, O.

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A. I. Root, Editor Home Department. J. T. Calvert, Business Manager.

Entered at the Postoffice, Medina, O., as Second-class matter.

VOL. XLI. APRIL 1, 1913 NO. 7

Editorial

At the Cincinnati National convention, Secretary Tyrrell either mislaid or lost his memorandum-book in which he had taken a number of subscriptions to the *Beekeepers' Review*. He desires that all who gave him such subscription write to him, giving their names and addresses. Address E. B. Tyrrell, 214 Hammond Building., Detroit, Mich.

Sometimes beekeepers in California and other western States are inclined to poke fun at the "one-horse" beekeepers of the East. A great many of these Westerners will have to take off their hats to one beekeeper of the East, or more correctly of the Southeast, Mr. J. J. Wilder, of Cordele, Ga. He has over two thousand colonies in thirty-nine different apiaries, and in 1912 produced one hundred and twenty-five thousand pounds of honey.

WASHING CLOTHES IN HONEY.

While visiting in Oklahoma we learned how one of the early pioneers in that State was in the habit of washing her clothes in honey. We suppose the honey was of inferior quality; but the washwoman explained that the honey would remove soiled parts and dirt equal to or better than soap. We presume, of course, that after the clothes have been soaked and washed in honey they were then rinsed in water.

DEATH OF OLIVER FOSTER.

This occurred March 12, as the result of a complication of stomach troubles and pneumonia, at his late home in Boulder, Col. Mr. Foster was an uncle of Mr. Wesley Foster, our Colorado correspondent. Years ago he was more of a contributor to this journal than he has been of late years; but he had a genius for inventing things; and the old volumes of Gleanings as well as the A B C of Bee Culture will show that he was a pioneer in the use of some ideas that are now common. We hope to have a fuller sketch of him later, written by his nephew, Mr. Wesley Foster.

A FOUL-BROOD BILL PENDING IN MINNESOTA.

A bill creating the office of State Apiculturist, providing for instruction in beekeeping, and for the suppression of contagious diseases among bees, and appropriating money therefor to the amount of $8000, has been introduced into the Minnesota legislature as House file No. 882, by Representative Frank Hopkins, of Renville Co., and Senate file No. 701 by Senator Murray, of Renville Co. Every beekeeper should write to his Senator and Representative at once, urging them to give the bill their support.

OUR COVER PICTURE.

Our cover picture for this issue is appropriate in that it gives a glimpse of the outfit used by one of our California correspondents, Mr. M. H. Mendleson, for taking care of extracted honey. Notice that the honey runs by gravity from the extracting-house into the large tank, from which it is drawn later into the 60-pound square cans regularly used. A supply of these is shown stacked up in the foreground. Wherever the extracting-house may be located on a hill-side, so that advantage may be taken of the natural fall for the gravity system, the plan has much to commend it, for it is simplicity itself. The roadway should lead to the lowest point for convenience in hauling away the honey.

A NEW BEE PAPER IN CALIFORNIA.

The *Western Honeybee* is to be the name of a new bee journal published in California by the California State Beekeepers' Association. Mr. Geo. L. Emerson, of 3497 Eagle St., Los Angeles, Cal., will be manager and probably editor. The California Beekeepers' Association was never in a more flourishing condition than it is now. There are six hundred members, and the membership continues to grow. For some time there has been felt a need for a special bee paper to present the interests of the California beekeepers, and the time now seems ripe for launching the new paper. It

will appear about April 1. GLEANINGS welcomes it into the field, and sincerely believes that it will do a large amount of good on the western coast.

HELEN KELLER, THE BLIND DEAF-MUTE.

THIS wonderful girl recently delivered an address before a thousand people. The wonder of wonders is that, with apparently no means of communicating with the outer world, she is now able to talk, write, sing, play the piano—in fact, do every thing that we all do except see and hear. Play the piano! how is it possible that one can produce strains on an instrument that she can not hear? But GLEANINGS has more than a common interest in Helen Keller. She wrote a short article for it (p. 844, 1891), when she was about eleven years old. If we are right, GLEANINGS was one of the first to publish her letters, and since that time her fame has gone around the world. Her picture appears on page 463, 1891, with much information concerning her.

LOWER FREIGHT RATES FOR HONEY IN NEW SOUTH WALES.

FREIGHT rates on honey in New South Wales have been lowered, as the honey now goes as Class A, the rate of which is lower than Class B. There is no distinction made between honey in comb, in glass, or in tin, as shown by the following clipping from the *Agricultural Gazette* for September 2:

The Chief Commissioner for Railways has approved of the charges for the conveyance of honey by rail being reduced from "B" to "A" class rate and conditions, and the necessary by-law has been forwarded for the approval of the Executive Council. This means that for the future the rates per ton will be as follows, two tons being the minimum:

Miles	50	Rate per ton	$1.60
Miles	100	Rate per ton	2.88
Miles	150	Rate per ton	3.90
Miles	200	Rate per ton	4.84
Miles	300	Rate per ton	6.34
Miles	400	Rate per ton	7.34
Miles	500	Rate per ton	8.34
Miles	600	Rate per ton	9.34

It would seem as though there would be a difference between the rate on comb honey and on extracted, though no mention is made of it in the above. Will some one from Australia please explain?

SOLID VS. SCREEN DOORS FOR HONEY AND EXTRACTING-HOUSES.

A CORRESPONDENT in this issue recommends the use of a solid door in place of a screen door to the extracting-house. He is entirely correct. Others have called attention to the importance of the same thing. A solid door that is used for constant ingress and egress should, of course, be kept closed. Ventilation should be secured by screens at the windows. The robbers that will cluster on the window screens will have no way of getting in; but robbers on the screen door, every time it is opened, will pounce into the building. There are some extracted-honey producers who contend there should be no bee-escapes on the window screens—that the robbers trapped within the building should be held in until the work is done, and then released when they can do no harm to any one at the close of the day. If they are professional robbers, they make it a practice to let them starve to death, because, if released, they will continue to make themselves a nuisance.

INDOOR WINTERING AT MEDINA; BROOD-REARING IN CELLARS.

WE went into winter quarters last fall with something like 600 colonies. About half of them were wintered outdoors, and the other half in cellars. So far the loss all told does not exceed one per cent.

In GLEANINGS for February 1, page 73, we reported how we moved on a sled some ten miles one of our outyards during the dead of winter, when the temperature was only 15 degrees above zero, to one of the cellars. Prior to that time we had moved in two other yards and placed them in the same cellar. All the moved lots of bees seem to have wintered equally well so far as we can discover; but we have taken out only half of them, especially those that began brood-rearing in December and January. The remarkable thing is that many of the colonies are stronger this spring than they were last fall. Ordinarily there is not much brood-rearing in the cellar; but the late moving possibly stimulated the bees to breeding earlier than usual. Well, we were a little fearful that so much brood-rearing would prove disastrous toward spring; but, so far as we can see at this time, no bad results have followed.

There was one weak nucleus of Italians last December. A fine Carniolan queen was sent in, and she was introduced to this nucleus of Italians. They began breeding almost immediately; and this spring, when we took them out, there was the original lot of Italians and a fair-sized colony of Carniolans of all ages. About four-fifths of them were of the black race, and a nicer lot of bees we never saw.

Another thing that developed was that those colonies that were bred so early began to use up their stores. They were given pie-plates of candy, as already explained, and the breeding continued. More anon.

THAT SCHEME FOR BRANDING QUEENS.

In this issue Mr. H. Bartlett-Miller tells of a scheme for branding queens—that is to say, painting them with a brush so that they may be instantly recognized on the frames among other bees. The scheme looks like a good one, and it will be especially valuable where black bees or dark hybrids are used. Where bees are put "on the run," the queen is pretty sure to join in the general "skedaddle," making it almost impossible to find her. A little dab of color on her back and wings would help out very materially. With ordinary medium-strength colonies of Italians, Caucasians, or Carniolans it seems to us that it would hardly be necessary to go to the trouble of branding the queen. In the case of bees of quiet behavior it is not difficult to find the queen-mother. The ordinary practiced eye will catch her almost as soon as she comes in sight.

According to our correspondent it takes considerable time and skill to do this branding. The time consumed in doing this work in the first place apparently would about equal the extra time that might be required to find the queen without the colored markings; so we should say it is about an even stand off, with the advantage in favor of no branding. While Mr. Bartlett-Miller reports the marking with color seems to have no bad effect, yet we should be very much afraid that, in the case of valuable queens, the bees later on might ball them. And is it not true that the color would wear off in the case of a good layer?

OUR SYMPOSIUM ON EXTRACTING.

We take pleasure in presenting in this number our symposium on the subject of extracting, in both a large and a small way; in fact, covering the whole field from the standpoint of the latest developments. It will be noticed that each of our correspondents works in a slightly different way from the others. There are some who prefer small hand machines, and others who recommend and use the large power outfits, either centrally located or portable. Mr. R. F. Holtermann has the largest extractor in the world. Of course we have not forgotten the 24-frame non-reversible machine made for Mr. Osborn, of Cuba, some twelve or fifteen years ago. But apparently this was too much of a good thing. The machine used by Mr. Holtermann is as large as is practicable to make a machine.

The advantage of a large machine over a small one is that the combs can be kept revolving for a longer period of time. The longer the frames can be kept on a whirl, the dryer they will become. Small machines, unless the combs are kept in them for the same length of time, would make the process of taking a given amount of extracted honey too slow. Combs that are very wet contain too much honey to go back into the hives. Some large producers believe that the residue of honey sticking to the combs just extracted is not *all* put back in the combs, but that much of it is simply wasted by the bees eating more than they require, just as their owners sometimes do on Christmas and holidays.

There was a time when many large producers seemed to prefer one large central power extracting station, and carrying the combs to and from the outyards. Apparently they are beginning to find that it is more economical to carry the extracting outfit than the combs. There are still others who have a small machine and a complete outfit at *each outyard*. But Mr. R. F. Holtermann appears to be one of the large producers who carries a big power outfit with him from yard to yard, and he has made a success of it. While a 12-frame machine is more difficult to move, yet with the right kind of planning it can be used at all the outyards together with the requisite equipments. Mr. Holtermann's article deserves careful reading, as he is working out a new proposition—that is, whether a large 12-frame power-driven outfit is more efficient carried from yard to yard than two eight-frame machines driven by one engine. This is a big question. Human labor is the most expensive factor that the beekeeper has to deal with. The larger the capacity of the outfit relatively, the less the cost of removing the honey from the combs, providing, of course, a plan has been carefully worked out, so that there will be no false motions and no waste of time on the part of several men waiting on *one man*. The secret of managing help is to plan the work so that all the men will be busy—so that each one on arrival at the yard will know just what his duty is, and a good boss will see that every man makes every minute count.

There are several other equally good articles in this number that will bear careful reading; for we believe that we never published any issue of GLEANINGS that has had more real trade secrets in it than are given in this symposium. The big men have been big enough to tell their fellow-competitors their own tricks of the trade. Of course none of them will ever lose by it, and each will be the gainer.

Stray Straws

Dr. C. C. Miller, Marengo, Ill.

That tramp beekeeper spreading bee-disease, p. 138, suggests the thought that it would be some help in such a case if there were some way by which a man would have to buy the right to territory before he could dump sick bees upon it.

R. F. Holtermann, p. 123, you enumerate the advantages of the ⅝ top-bar over one ⅞ thick. That's all right for extracting; but the beginner should be told that these advantages are overbalanced by the whiter sections obtained over ⅞ top-bars. [Many others have testified to the thing mentioned by Dr. Miller; namely, that sections are whiter and cleaner over a ⅞-inch top-bar than with a ⅝ or ⅜.

Beginners who start out-apiaries with their automobiles will never know the thrills we older ones had with our horses. But they were thrills of fright and fear. The worst scrapes I ever had with bees were in connection with horses, and I always drew a long breath when well started away from an out-apiary. I never had any very bad accident, but some narrow escapes, and there was always that dread which helps to turn one's hair white.

L. C. Bousseau sends design for self-spacing. Sole leather ¼ inch thick, sliced nearly through in ¼-inch squares, to be cut entirely apart after center holes are punched. Ought to be good if bees don't gnaw them. [Dr. Miller forwarded to us specimens of the sole-leather spacers. Even if such leather were sliced so as to be ¼ inch thick it might swell out or dry up. If the latter, it might shrink down to one eighth. This would render it useless.—Ed.]

J. L. Byer, p. 141, I feel a bit shaky about insisting that 32 to 35 would be an ideal temperature in a four or five months' winter confinement of bees. I'd give something to know what it is. Please say what temperature you would prefer without any change for a five-months' pull. But I've some question whether 32 to 35 would start brood-rearing as soon as a much lower temperature. You know brood-rearing starts earlier outdoors than it does in cellar; and isn't that because it is so much colder outdoors?

E. D. Townsend says of foul brood, *Review*, 45, "Once in a locality, always in that locality. One can free a hive of the disease, very probably a yard, but not a locality of any considerable area." I guess that's about right, Bro. Townsend, at least regarding the European brand. [This statement of Mr. Townsend is generally true, but not always so. We have apiaries where foul brood formerly existed, but they have been free from the disease for many years. But if foul brood once gets into a set of combs it will keep cropping out from year to year in the apiary where they are used; and then the only thing to do is to melt *all* the combs and start anew on fresh foundation. That is precisely what we had to do in the yards that originally had foul brood. We have never had European foul brood in our yards, and therefore can not speak from experience.—Ed.]

Apropos of J. M. Munro's letter about bees changing color, p. 129, J. Kruse, *Centralblatt*, 343, gives a circumstantial account of several cases of changing to darker color, and *vice versa*, caused by change of location and pasturage. Buckwheat and heather darken the color. This change occurred during the life of the same queen, and there was also a change in the character of the bees! [We arise to inquire if this is true. Does the color of the honey affect the color of the bees? We are frank to say that it does look reasonable. We admit that the kind of honey sometimes affects the temper of the bees, or rather, we should say, the manner in which the honey is secreted from the nectaries of the flowers. A plant like buckwheat that secretes honey only during the early hours, and then stops, will make bees crosser than the white clover that secretes honey all day.—Ed.]

Dr. Zander says that at 68 degrees Fahr. a man requires 3 1-3 times as much air as a lot of frogs weighing as much as the man, and a bunch of bees of the same weight requires 74 times as much air as the man! Commenting on this, Franz Richter figures that at 68 degrees a colony weighing 13 pounds requires hourly the enormous quantity of half a cubic meter of air, or 17.6 cubic feet!—*Bienenvater*, 61. I thought I had a pretty high conception of the importance of air for bees, but I'll have to run it up another peg. [You seem to thing a cubic half meter of air is a large quantity. To us it seems rather small. A good deal will depend, however, on whether the bees are in a semi-quiescent condition in the cellar or outdoors. In the former place they would not require, at a mere guess, more than a fourth the air that they would when they are active in summer.

We are quite prepared to believe that a man would require three times as much air as a lot of frogs weighing the same.—Ed.]

Notes from Canada

J. L. Byer, Mt. Joy, Ont.

It is to be hoped that the ruling relative to shipping beeswax in boxes instead of bags will never be in force in this country, as it would be a lot of bother for nothing. I have shipped many hundreds of pounds of wax in bags, and never once had the first complaint. But I always double the sacks, and take no chances. Being able to buy large sacks at about 3 cts. each, the package is very cheap, and always handy to use. It seems a pity that the carelessness of a few will often make trouble for a great many other people as well as themselves.

* * *

HOW BEES ARE WINTERING.

We are getting all our "winter" at the tail end of the season here in Ontario. We had a mild January; but February and March, to date (7th), has been steadily cold with high winds. There has been no snow here in York Co. to speak of; but north 100 miles at the Lovering yard it is mountain-high. Hives have been exposed all winter to the cold; and often have we wished for snow to shelter them somewhat. Reports received during the past two weeks are not as good as early in February, and present prospects point to heavy losses outdoors wherever bees were not fed well last fall. Natural stores do not seem to be of good quality, and much granulation is reported.

* * *

In reviewing Mr. Sladen's splendid work on the bumblebee, p. 73, the editor says that "the sting of the bumblebee is not very severe." I don't know about that. It all depends on the size of the *bee* doing the stinging and the size of the *fellow* getting stung. My earliest recollection of bumblebees is of having been told by a chap older than myself that "queen bumblebees can not sting." Shortly after getting this bit of knowledge in my cranium, I sauntered out into a patch of sunflowers where numerous members of the bumblebee family were disporting themselves; and after a careful look a "queen" was found on one of the blossoms. I was only five years old at the time; and whether that has any thing to do with my recollection of the affair or not in so far as the size of the *bee* is concerned I am not prepared to say. Any way, my memory says that this particular "queen" was about an inch long; and when I confidingly grasped her in my hand the sting I received felt much longer than an inch, and the small drop of blood that oozed from the puncture gave me such a scare that the pain, coupled with the sight of blood, made me exceedingly emotional for the time being. Since then I have learned that, while the queen can sting, the drones—at least those of some species—can not do so. Especially is this so of the chaps that are often found under trees on hot days; and in schoolday times we used to call them "shade bees," and catch the poor fellows with impunity.

* * *

Mr. Pettit's footnote to my article on page 113, Feb. 15, requires some slight explanation. In the first place, I cheerfully admit that I am to blame for not being more careful in writing copy for the bee journals, as I never rewrite any thing. That explains why I am made to say, "during the past season," when I certainly meant to say, "during the past few seasons." Aside from that I have no apologies to make, as I have simply stated facts as given to me. What my own opinion is, that is another matter; but Mr. Pettit knows, or should know, my attitude, as *actions* speak louder than words. I have nothing but the best wishes toward all educational movements, let it be in beekeeping or any thing else; but I do not think it is wise to publish in the daily press reports of big honey yields and profits, when often gross returns are given instead of net receipts.

As to doing "government work," there are other methods of getting information aside from being on the civil service; and as to the term "producers," all will understand that I had in view the people who mainly depend upon beekeeping for a living.

By the term "boom" I rather had in mind the great activity in the bee business, the attendant high prices of bees, etc., instead of the high price of honey as Mr. Pettit seems to think was the case. And yet I am not at all dissatisfied with the advance made in honey during the past few years; for although honey has not increased as much as some food products, yet no one will dispute that the raise has been substantial. Only seven years ago, if I remember correctly, I sold my first large amount of honey at 7¼ cts. delivered, and was very glad to get that price. This year I sold very readily honey no better, at fully a half more than that figure. Honey is not too high in price—many honestly think it is not high enough; but, all the same, I am very thankful that prices are as good as they are—things might be worse.

Beekeeping in California

P. C. Chadwick, Redlands, Cal.

Thousands of colonies have been shipped to the alfalfa fields of Nevada, Utah, and Idaho during the past two years, and others are still going. A good old-fashioned honey crop in California would have a strong influence in checking shipments.

* * *

The good rains of which I spoke in the last issue stopped abruptly, and we are again anxious for weeping skies, for our season for rains is growing shorter day by day, with yet far too small a rainfall to hold the honey-plants through the blooming period. The sage that escaped the frost is doing finely, and has an exceptionally healthy color and growth. The oranges will be blooming in a short time in profusion; so if we get plenty of rain to aid the sage, who knows but we may yet die rich?

* * *

The California State Beekeepers' Association will, in the future, be known as the Consolidated Honey-producers of California. When our foul-brood law was introduced in the State legislature, one of the features of the bill was that it placed the appointment of the inspectors largely in the hands of the association. The law-makers, upon investigation, found that there was no legal organization on record known as the California State Beekeepers' Association. The situation was grasped quickly by the officers of the association, and a meeting called to organize under the laws of the State to give a legal standing as well as a legal name. There had previously been an organization known as the California State Beekeepers' Association which was officially dead, but the name could not be used again in an official way, so the name stated above was chosen.

* * *

I recently had the pleasure of entertaining Mr. C. C. Matthews, of Idaho, and Mr. M. H. Mendleson, of Ventura. Mr. Matthews is in California buying bees to ship to Idaho. He is a beekeeper with much experience, and will doubtless succeed. Mr. Mendleson needs no introduction from me; but I must say I have rarely enjoyed a visit from any one more than this one. With so many years of experience among the bees, and such a large producer, he is a landmark in California beedom. I also had the pleasure of signing a petition for a son of Mr. M. Seager, who is out for the office of County Inspector, and has the solid backing of our county association. The elder Mr. Seager is a beekeeper of long experience, having been in the bee business in California for the past 37 years, and a good friend of the writer.

* * *

Utah is now wrestling with a foul-brood law that makes inspection at the State line necessary on all shipments of bees entering the State. We in California are now trying to get a law to overcome the evils of county ordinances of an uncertain nature, and make it possible for the clean and careful beekeeper to transport his bees from one part of the State to another, and make it impossible for an inspector such as we have had in San Bernardino County to hold the office for ten years over the protest of the beekeepers. I believe with Editor Root (p. 139, March 1) that a federal law should be enacted at once; not only, as he says, to stop the unprincipled tramp beekeeper from spreading disease, but to have a condition of certainty in law that will give clean bees a clean bill of health for shipment from one State to another, avoiding the necessity of State quarantine laws that seek to correct an evil and make a worse one.

* * *

Iowa State convention recommended the amendment of their present foul-brood law to prevent the shipment of bees into that State. I thought California had all of the insane notions there were on this subject; but here comes Iowa with a notion as bad as any we can produce. It is to be hoped our legislators will not allow the beekeepers to persuade them to repeal the inter-state commerce law without giving the national Congress at least due notice of their intentions. I doubt very much if the ruling of our California Agricultural Commission would prevent the shipment of bees from Utah to this State, if a test case were made in the United States Courts, unless it could be shown that the bees or fixtures actually contained evidence that the alfalfa weevil was being transported to this State. I do not believe any court would hold that the mere fact that there was danger of the weevil being brought in would be sufficient to stop a shipment of bees, or any thing else for that matter. There are few ships, of the many that land at our harbors daily, from which there is not danger of disease being contracted; yet the ships come and go, being subject to quarantine regulations, to be sure, but not prohibited from landing if no contagion develops within a reasonable time.

Beekeeping Among the Rockies

WESLEY FOSTER, Boulder, Col.

SWEET AND SOUR SOIL.

Acid soil is sour, and will not grow clovers well. Acid soil will turn litmus paper from blue to red. If you have an acid mouth your breath will do the same to the blue litmus paper. If you have an acid mouth you will soon be going to the dentist unless you sweeten your mouth out with a toothbrush and tooth-powder. A clean tooth never decays. Lime sweetens the soil and allows the clovers to grow. And what could be more natural than for a sweet soil to grow plants that will produce abundant nectar? Emerson said there are many sweets in the soil if we but knew how to come at them. He did not tell us, but we now know how to come at them by liming the soil and planting the clovers. The bees will collect the sweets for us. A land flowing with milk and honey will be found where limestone sticks out of the hillsides. The clovers grow, the cattle fatten, milk is abundant, the locusts thrive on the clover, and the wild bees collect the wild nectar for the diet of any John the Baptist who cares for a diet of locusts and wild honey.

* * *

GLASS SUPER COVERS.

On page 52, Jan. 15, you spoke of Mr. Babberger using panes of glass for honey-boards. Will you be so kind as to give me a little information on the subject? I also use the Danzenbaker hive. Does he use panes of glass 16 x 20 the same size as the hive? and does he use single or double strength glass? Is it not likely to get broken in prying it up, being stuck with propolis? Does he let it stay on there all the year? Does he use a super cover of wood in connection with it?

North Carolina. S. D. M.

Mr. Babberger uses glass 16 x 20, or very close to that. They are the size of the outside of the hive. He uses single-strength glass, and says he has but little trouble with breakage. I believe he told me that he broke, on the average, two glasses each season.

Mr. Babberger says that bees should not be molested when the propolis sticks. I should judge from his remarks that he does not open his hives except in warm weather. He tells me that he can give his bees a very fair examination without removing the glass. The glass is used as a honey-board over the supers in summer, and nothing but the cover is used with it.

* * *

WEIGHT OF HONEY IN 4 x 5 SECTIONS.

You speak of Mr. Hill and Mr. Babberger using 4 x 5 plain sections. How do these men get the 4 x 5 x 1⅜ sections to come under your "fancy" and No. 1 grades? As I understand it, these grades must weigh 13½ oz. I am using the 4 x 5 x 1⅜ sections, and can't get the very best of them to go over 13 oz. Do these men use 4 x 5 x 1⅜ or the 4 x 5 x 1½? I am thinking of changing to the 1½. What will the 4 x 5 x 1½ weigh when well filled? I want a plain section that will weigh a pound when well filled. Will the 4 x 5 x 1½ do this?

Missouri. T. H. B.

Neither Mr. Hill nor Mr. Babberger grades honey according to the Colorado rules. The Colorado rules are made for the 4¼ x 4¼ x 1⅞-inch section. But I do not understand why you can not get heavier honey than an average of 11½ to 12 oz. in 4 x 5 x 1⅜ sections. This is the size used by Mr. Babberger, and I think Mr. Hill's are the same, although I am not certain.

Leaving the bees a bee-space on each side of the beeway section, and allowing for the bee-space provided by the fence separator used in the Danzenbaker super, I find that the 4 x 5 x 1⅜ section has 27.5 cubic inches of available space for the building of comb, while the 4¼ x 4¼ x 1⅞-inch section has only 27.09—a difference in favor of the tall section of about two-fifths of a cubic inch. I am satisfied that Mr. Hill has many sections weighing from 13 to 15 ounces. Several years ago I produced quite a little honey in 4¼x4¼x1½ plain sections, using fences, and had little trouble in getting them to weigh 13 to 14 ounces, though I could not get the bees to put a pound in them.

Do you put in full starters, filling the box full with a top and bottom starter? Perhaps you had an unfavorable flow this last season; or you may put on too many supers, and make the bees slight their work.

I have had no experience with the 4x5x1½ section; but I know some Colorado beekeepers who have used 4 x 5 x 1⅝, and they get comb honey averaging a pound, and some sections will weigh more than that. I doubt whether you can get the average comb built in a 4 x 5 x 1½ to weigh a pound.

Why do you not use a standard section? By removing the super-follower, using separators between each row of sections, having a top starter of two to three inches, and a bottom starter of ⅝ inch, you can get combs to weigh one pound each. But that space left when the follower is removed must be equalized as nearly as possible between all the rows of sections. The way one Colorado beekeeper (Walter Martin) does is to shake the super from side to side lightly, thus leaving the spacing about right. When the bees have begun work, any uneven spacing may be adjusted, and then the bees will soon glue it so that it will stay.

Conversations with Doolittle

At Borodino, New York.

BEES AS ESCORTS FOR QUEENS IN MAILING.

I expect to rear queens for sale this coming season. Please tell us how many bees to put in with any queen as escorts. What should be their age?

In mailing queens it is important to use the right number of bees of the proper age. During the summer months, and where the queens are to go no further than the domains of the United States or Canada, this ordinary small mailing-cage answers very well, and the proper number of bees to use is from eight to twelve, according to the temperature which is likely to be met while they are in the mail. For very hot weather, and with the destination to be in the middle and southern States, I have found that eight bees do best during the last half of June and the months of July and August, while for the northern part of the United States and Canada I generally use ten for July and August, and twelve for the other parts of the mailing season.

Some years ago I went through a series of experiments to ascertain these things, some of which covered a period of nearly four months. I prepared and provisioned the cages in different ways, and used different numbers of bees, using queens which I wished to supersede, not on account of their age, but on account of their being mismated. Being thus prepared, the same as were others which were mailed, these were put in a dark place in my shop, some in the lower story, others in the upper story, where it was very warm the most of the time; and three or four times during each week these cages were either thrown about the room or left in an old sack made of leather, and the sack tossed about, something after the manner in which I had seen the mails thrown off fast-running trains. Without specifying further as to details, in this way I arrived at what I considered the different ways best suited for a successful termination; and although I have tried nearly all of the devices brought before the public since then, few, if any, have proved better than what I settled on then.

But for either spring or fall I do not believe that the best results can be obtained by using these small cages. For these reasons, and for all places outside of the United States and Canada, a larger cage should be used, one having at least twice the capacity. With this larger capacity I use from twelve to twenty bees in accord with the expected temperature and the distance to be traveled. Then for all places outside of North America, a still larger and differently constructed cage should be used, one which will allow the bees to collect in a comparatively closed apartment when passing through a low temperature; but that where extreme heat is encountered, will allow them to have access to a larger and well-ventilated compartment. With cages constructed after this fashion, and with from twenty to thirty bees, I succeeded in getting three out of five queens alive and in good shape clear to Western Australia, this requiring a period of thirty-nine days.

As to the age of the bees which are to accompany queens while in transit, the younger the bees are which have had a cleansing flight the better. Young bees which have never flown to void the pollen excrement which accumulates in their intestines through their larval and pupa state, are liable to soil themselves, the queen, the food, and the cages, where more than two or three days' time must be consumed during any journey through the mails. And old worn-out bees are little if any better.

Just how to tell which are the old and which are the young bees is a matter that often puzzles very many. I studied many a long week, month, and even years, in this matter, and I conducted different experiments along this line, till finally, in watching the bees carefully, after only just enough smoke had been used to quiet them properly, I found that, as a rule, bees which were from six to ten days old, the same being slim in appearance, were the ones which would stick their heads in the cells of honey surrounding the brood, and begin to fill with this honey. And such are the bees which I have used for nearly thirty years, with good success. And, what is in our favor, is that, when in this position, these bees are the most easily picked from the combs, as the wings stand out inviting us to take hold of them, and thereby carry them to the cage in the manner best suited for their entering the cage, and with an almost positive insurance against being stung.

Some queen-breeders say that we should never put in a bee that has stung us, as it will soon die, and is quite likely to get stuck fast in the entrance to the food-chamber. I used to think so myself; but finding that it was not the easiest job to get a bee out again which had left its sting in my finger when closing the entrance to the cage, I wrote to a party in Texas, to which such a cage was going, to inform me on arrival if there were any dead bees in the cage. In due time he replied that every bee was alive, and "smart as a cricket."

General Correspondence

LABOR-SAVING PLANS IN LARGE OUT-APIARIES

Different Problems in Different Localities

BY R. M. SPENCER

Locality has much to do with the methods of handling bees, either on a large or small scale. Where I am located the winter problem is nothing compared with that of cold climates. Here a nucleus of three frames of brood and bees will winter in good shape provided they have plenty of honey for stores. In the East the main problem in spring is to get the bees to build up in time for the flow; while here the main problem is not to let them build up too fast and swarm before the flow starts.

In this locality bees begin to breed about Jan. 15, and have a light honey-flow until about May 15, when the main flow starts. It is easy to see then that the breeding season is very long. This compels us to use a large hive. Ten frames is what I use, and tier them up three stories high, allowing the queen to breed in all three bodies if she desires. This long breeding season makes a race of bees such as Italians more suitable than any swarming races like Carniolans.

Our work here generally begins about Jan. 1, when we go to all the yards, close the entrances down to about two inches, and take up all dead colonies to prevent the combs becoming moth-eaten. About Feb. 20 we go over all hives, remove supers and surplus honey, stacking the same up in the yard. During March we build up the weaker colonies by taking brood from the stronger ones.

WORKING SO RAPIDLY THAT ROBBERS CAN NOT KEEP UP.

We use a method of preventing robbing during this early spring work by going over the hives so fast that robbers can not get a chance. Each man has his duty to do. Say a crew of five men were going through a yard of 250 colonies in a day. The first man's duty is to take off the lids. No. 2 smokes the bees. No. 3 glances into the hive, calls out the number of frames of brood; or, if a frame is wanted, he calls for it. No. 4 brings the frame and puts it in a vacant space and returns the empty comb to a box of combs which is always kept covered. No. 5 then replaces the cover and sees that it is secure from robbers.

By this method we go over the hives so fast that robbers do not stand a show. We sometimes see them trying to get under the lids, five hives or more behind where we are working. If they become bad we paint the cracks with fresh white paint, and they will not try to get in, as the bees will not alight on fresh paint. We also jump over to the other side of a yard after getting over one row, and this also throws them off their track.

We always aim to keep not too many bees in a yard, but yards close together. We figure that, if we have 2000 colonies in four yards of 500 each, in case of disease we have to fight it in 500 colonies, while if we have eight yards of 250 each we have only 250 to look after. Again, in poor years 500 will not make a living, but 250 will. On the other hand, large yards cost less to operate, and produce large crops in good years. We try to locate all our yards in well-sheltered places away from winds.

There is no question in my mind but that in many cases queens have been condemned for poor qualities when the main cause was drifting of bees. In a large yard of several hundred colonies, those in the center of the yard will always be in poor condition while the outside colonies will be strong. I have often noticed this in my yards where the flow in spring began on oranges to the west. The west side of these yards would be very strong, while later on, when the flow from other sources began in the east, the colonies on the east side would build up quickly, while those on the west would become weaker. The way to prevent this is to keep the hives in groups, or by some well-marked location. About all the locations in California are now occupied except some that are back in the mountains where roads must be built in order to reach them. Many localities are already becoming overcrowded.

One of the main problems here is to secure labor to handle the bees. It is hard to get help who will go back into these canyons and live and handle the bees.

All our hives are three-story, and all the honey is sealed and thoroughly ripened before extracting. We use the usual methods of extracting, running the honey into tanks in order to clarify it.

GALVANIZED TUBS FOR UNCAPPING-CANS.

We find the best uncapping-boxes for our use to be tubs with a one-inch opening at one side on the bottom. These are set over a trough, and the honey is allowed to drip into the trough and run into tanks. The advantage of these tubs is that we can use one to-day and let it drip clean until to-morrow, when we screw in the plug and haul the whole thing home, and melt the

cappings there. All we need is a large supply of tubs to handle the cappings as fast as filled.

Nordhoff, Cal.

SPRAYING FRUIT-TREES IN BLOOM

Advice in "Better Fruit" in Regard to it

BY J. A. GREEN

One of the most subtle attacks on bee-keeping interests that has ever come to my notice is contained in articles in *Better Fruit,* a magazine published at Hood River, Oregon. *Better Fruit* is a high-class magazine, well printed, superbly illustrated, and occupies a very high place among publications devoted to the fruit industry. In the January number are several articles by W. H. Volck, Horticultural Commissioner of Santa Cruz County, California, who is listed as one of the associate editors. In one of these, after reciting the damage done in his district by various leaf and fruit eating insects which begin their work very early, he says, "These foliage and flower-devouring insects are all controllable with arsenicals provided the spraying is properly done in due time. Owing to the very early attacks of tussock caterpillars, canker-worms, and leaf-folders, the first spraying should not be delayed until the blossoms have all fallen, but applied while the trees are in bloom. The period from full bloom to the time when two-thirds of the blossoms have fallen appears to be the most practical timing. Spraying with good arsenicals will cause no injury to the blossoms." Later, in the same article he says, "Apply the first spraying when the trees are in bloom, full bloom to the time when two-thirds of the blossoms have fallen."

In another article, speaking of a special brand of arsenate of lead, he says, "It may also be used on apples and pears in the Coast districts if applied very early (while the trees are in bloom), or if combined." Again, "Acid arsenate of lead may be used . . . if applied before the trees have gone out of bloom; but any later sprayings will be dangerous." Once more, "The first application for canker-worms, codling moth, etc., had best be applied before all the blossoms have fallen;" and, finally, "In the Coast districts the earliest application (before all the blossoms have fallen) may be made."

The persistent reiteration of the same idea shows a deliberate purpose to induce as many as possible to follow his teaching, though he cleverly avoids giving any reason for it, further than that the leaf and bud eating worms that he mentions begin their attacks very early, before the blossoms are open. The position of the man, and his evident familiarity with all the minutiæ of spraying, will tend to lead many to follow his advice without analyzing it or suspecting any ulterior motive.

Now the facts are that, for the purpose of poisoning the tussock caterpillar, canker-worm, or any other of the leaf or bud eating insects that begin their work early in the season, there could be no possible advantage in having the tree in bloom when the spraying is done. A spray applied four or five days earlier, before the blossoms open, would be even more effective in controlling them, if time is any object. But unless these pests were unusually bad, there could be no great harm in waiting four or five days later, until the petals of the blossoms have dropped, which is the proper time to spray for the codling moth. For the control of the codling moth, a more effective job of spraying can be done after the petals have dropped and the stamenbars have withered and separated, so that the calyx cup can be more easily filled with poison. Also this spray will be equally effective in controlling the later attacks of all leaf, bud, or fruit eating insects.

The statement that spraying will cause no injury to the blossoms does not agree with the experience of many practical orchardists, nor with the teachings of nearly all the authorities. Most spraying is done nowadays with power-sprayers; and to do effective work a pressure of 200 lbs. should be maintained. I have seen even leaves and apples torn from the trees by such a spray, and it is only reasonable to suppose that, when it is driven upon the delicate organs of the blossoms, it will more or less damage them and prevent the proper performance of their functions, aside from the corrosive action of the spray or the hindrance to pollenization by the thorough wetting.

I have written to the publishers of *Better Fruit,* and hope that something may be done to counteract the influence of these articles. I shall write to several others of the associate editors, with whom I am acquainted, to enlist their influence if possible agianst this revival of an error that had nearly died out among fruit-growers, or at least the better-informed ones. Bee-keepers should post themselves on the principles that govern spraying, so that they may be better prepared to overcome the evils that the ignorance or prejudices of fruit-growers may bring upon them.

Grand Junction, Colo.

[We sincerely hope that our correspondent's efforts may succeed, for it is to be regretted that a horticultural magazine should come out with such a statement right in the face of conclusive evidence to the contrary that is being sent out by so many of our experiment stations. Here is another communication along the same line.—ED.]

SPRAYING TREES IN BLOOM

BY H. F. WILSON
Assistant Entomologist, Oregon Agricultural College, Corvallis, Oregon.

Mr. W. H. Volck, Horticultural Commissioner, Santa Cruz County, Watsonville, California, in the January number of *Better Fruit*, under the heading of "Caterpillars, Codling Moth, Aphids," pages 16 and 17, makes the following statements: (Quoted above.—ED.)

Note that he states that the time mentioned *appears* to be the best. This recommendation, which is undoubtedly given on reliable data and experiments, is a very dangerous one for both the beekeeper and the horticulturist. Certainly such a practice can not help causing the destruction of insects which feed upon the nectar of the blossoms, and, climbing about over them in search of it, aid in cross-pollination. In localities where it is followed, the honeybees will be destroyed; and one of our local beekeepers suffered such loss from the spraying of a single orchard that he was compelled to move to an entirely different locality.

It is a common recommendation of this station to suggest bees for the orchard and farm, both for the value received from the cross-fertilization of fruits and the surplus honey secured.

In view of this recommendation I will state that in Oregon we have the tussock moth, canker-worm, and several caterpillars which cause more or less damage to the fruit; but in only one instance have they caused enough damage to make it necessary to consider methods of control other than those now in use.

In localities where it becomes necessary to combat these early-feeding caterpillars, the spray should be applied before the blossom-buds open. At that time the young caterpillars will be feeding, and should be more easily destroyed than a week or ten days later.

There may be some opposition to this extra application on account of the cost; but surely the value of the cross-fertilized fruit over the self-fertilized will be more than the cost of spraying.

Just how much we can depend upon the wind and air currents for distributing pollen is hard to say; but several investigators have carried on experiments which tend to show that not as much pollen is distributed in this way as one would expect.

In conclusion I would suggest that the fruit-growers of every State be careful about spraying when the trees are in bloom; and such a practice should be resorted to only as the last and final means of insuring a crop of perfect apples.

A COLLAPSIBLE EXTRACTING-HOUSE AT EACH YARD

Hauling Combs Home to Extract Keeps the Bees Confined to One Story too Long

BY LEON C. WHEELER

Personally I should not like the plan of working outyards and carrying the combs, etc., back and forth every trip. I find that, if not absolutely necessary, a honey-house at each yard is at least extremely handy; and when one can have good portable houses at a cost of $25.00 to $40.00 each I believe that they are an economy. It is almost impossible to estimate accurately the amount of combs one will need at an outyard; but he can very easily have a supply of them in the honey-house at the yard, and can draw on them at will.

A light spring wagon will take the extractor, capping-melter, gravity separator, etc., to the yard, and a few cream-cans make excellent receptacles for carrying back the honey. If one has a permanent stand arranged at each honey-house it is a short job to set up the extractor and begin operations. Many of these combs must be put right back on the hive, and a lot of time is saved by not having to take them home and then back again another day. Then, too, the combs are on the hive quicker, and, consequently, the bees are not left so long in the cramped quarters of the single hive-body.

Large full combs of honey are not the easiest thing in the world to haul over rough country roads without breaking them; and as the most of this work comes at the close of the clover flow, and before the beginning of the buckwheat flow, bees are inclined to rob; and each hive, as one loads it, has to be carefully covered; and still, in spite of all one's care, he finds before he gets through loading that there is a swarm of eager excited bees around the load. These bees may not do any harm to the man who is fortunate enough to own an auto; but we poor fellows who are compelled to drive

a horse don't enjoy hitching up in a swarm of bees.

I'd much rather have that honey all extracted and put up in good tight tin cans; for then when I get through I can throw it on the wagon, hitch up without any bees to molest me, and hike for home as fast as the horse cares to go—no trouble about breaking combs.

Then, too, when I am working among the bees before extracting time I often find it to my advantage to take out certain combs of honey from a hive, and it is very handy to have an extracting-house in which to store these.

In loading the extractor on the wagon I set it flat on the bottom of the wagon, and fasten it there with two or three screws, and the pockets are tied to keep them from rattling; and when it is fixed this way there is no trouble about driving as fast as you want to. My extracting-house is built in six pieces—two sides, two ends, one floor, and one roof piece. These are bolted together at the yard, and strips nailed on over the corners to cover up the cracks which might otherwise let in some bees where the building is joined together. There is just one window which faces the yard; and this is fitted with escapes. There are two doors, one entering the yard and the other facing out, which admits of driving a team on the opposite side of the house from the bees to load. These doors are both fitted with foot latches—a very handy device which allows one to open the door with the foot instead of having to set down the hive, or whatever he is carrying, in order to open it. I should consider it a useless expense to fit out each yard with extractors, etc., as they can be easily carried along.

Barryton, Mich.

THE JEFFERSON AND ST. LAWRENCE COUNTY CONVENTION

BY R. F. HOLTERMANN

The two-days' convention held at Ogdensburg, N. Y., Feb. 20 and 21 did not lack in enthusiasm, and there were a goodly number of extensive beekeepers present. I shall make no attempt to report the convention generally, but simply record a few points which impressed me.

F. C. Hutchins, Massena Springs, upon the subject of "The Management of Outapiaries," said that his home apiary consists of 300 colonies, which he looks after himself, getting the help of two or three boys in extracting time. His experience is that if bees winter well they will spring well. He wants good queens, not more than two years old. On account of European foul brood he gives Italians the preference, although so far he has found no disease among his bees.

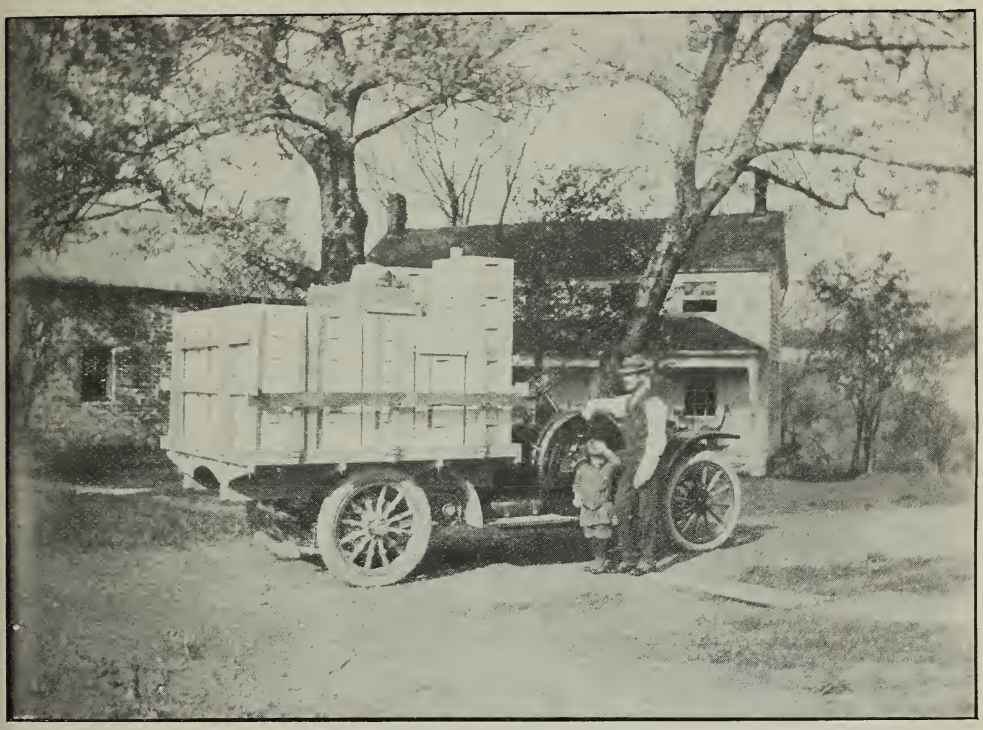
Mr. Hutchins advocated equalizing colonies by changing hives, putting strong colonies in the place of weak ones, and weak in the place of strong when honey is coming in and the bees are flying. He has also built up weak colonies by placing them over strong ones with a wire cloth between the two colonies. He has had some swarms when producing extracted honey, but not many. Swarming is kept down by means of shade, large entrances, and plenty of room. Where there are 200 or 300 colonies in an apiary he recommends that some one be placed in charge all the time. They can hive any swarms that issue, and enough work can be found to keep the attendant out of mischief. Mr. Hutchins also recommends a complete extracting and other necessary outfit for each apiary. He feels sure a good honey crop can be secured in an apiary with several hundred colonies if the bees are strong at the beginning of the honey-flow.

The question of breaking down queen-cells to prevent swarming came up. I stated that, when breaking down queen-cells that are the result of the swarming impulse, I make a point of removing all the royal jelly, reasoning that, if any of it is left, there will be a greater chance of the bees starting some more cells with the intention of swarming later. I do not shake a colony simply because it builds cells for swarming, for often the swarming impulse does not continue when the cells are broken down. Sometimes, however, it does continue, and I find instances where it would have been wiser to shake the bees instead of thwarting them week after week. However, on the whole I have gained more than I have lost by delaying or not adopting the "shake system."

Mr. T. Davis, Ogdensburg, gave a method which he had adopted, of destroying capped cells—a method which Geo. B. Howe, Black River, had also practiced for many years. This method consists in tearing the capped cells open at the side and destroying the embryo queen. If the cells are destroyed in this way the bees think their own queen destroyed them, and they destroy any cells the beekeeper might miss in the hive. Bees do not destroy the remaining cells unless the cells found are destroyed as described. Mr. Howe stated he had been following this plan for fourteen years with entire success.

Brantford, Canada.

To be continued.



Woodward's auto truck loaded with 105 supers and combs, ready for a trip to one of the outyards.

AUTO TRUCK FOR MIGRATORY BEEKEEPING

D. L. WOODWARD

Last season was my first experience with an auto, and I have enjoyed it very much, although I have found it quite expensive on account of using pneumatic tires and a high-powered car. My machine is a foreign Fiat, 45 horse power and 130-inch wheel base. Most owners of automobiles claim big mileage for their cars; but all I have ever been able to get out of my car is six miles to the gallon of gasoline. I bought it second-hand, buying just the chassis. After buying it I had a detachable touring body built for it. Then I built a delivery body, also detachable, and a truck platform with stakes, as shown in the picture.

The platform is 70 inches wide, 96 long, and is built of oak and ash, a very strong construction, but heavier than necessary.

Let me say right here to prospective buyers of auto trucks that I do not consider any touring car suitable for a truck. In the first place, it is geared too high; and in the second place the gears are not heavy enough to bear the strain that a truck must stand. I have had the misfortune to strip my differential gears twice during the season, so I know whereof I speak. I do not believe there is any pleasure-car built with heavier transmission and gears than the Fiat.

I would not advise any one to try to get along without horses in addition to the auto, as there are times when the horses come in very handy, especially in the spring and fall.

For six weeks last spring I was tied up on account of the muddy condition of the roads. If one lives on a State road, that disagreeable feature is done away with. I believe that an auto truck is a great convenience and a great saver of time; but if one can not afford to keep a pair of horses also, I would choose the horses for the heavy work, and keep a light car which would be inexpensive to maintain, for light work, such as marketing honey and running to the outyards.

The ordinary beekeeper would have very little use for a truck unless he practiced migratory beekeeping as I do.

I run two outyards—one five and the other ten miles from my home yard. I take all my honey home to extract, and carry the bees home to winter them. Then about July 20 I move them all on the Helderberg Mountains for buckwheat honey, a distance of ten miles. Last spring my bees were short

FIG. 1.—One of R. F. Holtermann's apiaries of twelve-frame hives.

of stores, and so I moved about half of them six miles from home into a fruit belt for fruit bloom. After fruit bloom I moved them to another location where I could get a large quantity of wild-raspberry honey. In this way they all got enough honey without feeding to carry them through and to keep up brood-rearing.

By means of the auto the moving is done quickly and easily, as I have a full equipment for doing all this kind of work. We usually close up ninety colonies the night before; and the next day, after I haul a load, my man stays at the yard to open the hives, and is generally waiting for me when I return with the next load. I find that it takes me just 45 minutes to cover the twelve miles, including loading and unloading, carrying thirty colonies to the load, fifteen to each floor. I have a skeleton floor that I use in moving bees. It is 18 inches above the platform, and is held up by the stakes. On the rear stakes is a cross-board with notches cut in for the floor boards to fit in.

I also find the auto a great convenience in selling honey at retail, as I live twelve miles from Albany, the nearest market. I have sold in three hours, from my auto on the public market, as much as 103 five-pound pails of honey besides that which was put up in pint jars and in five, six, and twelve ounce bottles.

It is certainly a pretty sight to see the auto loaded with seven or eight hundred pounds of honey in bottles, and in my special red and gold lithographed pails; and I generally have a good-sized crowd of admirers. I get 12 cents a pound in five-pounds pails; 10 cents for the five and six ounce bottles; 25 cents for the pint jars, and 20 cents for the twelve-ounce bottles. At those prices there is money in bees. Beekeeping is my sole occupation; and from 300 colonies I make a good living and save some besides.

Delmar, N. Y.

THE TWELVE-FRAME POWER EXTRACTOR

BY R. F. HOLTERMANN

Some of my friends claim that I am too conservative. On the other hand, there are those who state that I risk too much; and the reason they give for this statement is that they can point to certain fixtures or implements about the bee-houses which I am not using. These accusations prove to *my*

satisfaction that I am pursuing a fairly moderate course between the two extremes. Be that as it may, it was quite a wrench for me when I decided to leave the hand-turned extractor and venture on what was to me the uncertain sea of a power-extractor outfit.

When I state that, with a six-frame reversible extractor turned by hand, we have been able to extract 8500 lbs. of honey in a day, some will, perhaps, better understand my hesitation. However, after weighing the evidence available, and meditating upon the pros and cons, actual and perhaps imaginary, the plunge was finally made, and the securing of an outfit decided on.

The next thing was to decide upon the size of the machine. An eight-frame extractor was the largest available; and as we had already used a six-frame by hand, this did not seem like difference enough. The manufacturers could give me no help—in fact, their advice rather tended to the purchase of two six-frame machines rather than one twelve-frame. An arrangement was made for a twelve-frame machine, and I ordered a pump attached. I believe I was the first one to order an extractor with a honey-pump attached (now, do not all speak up at once, saying that I was the last).

As to the engine, a few dollars looked to me pretty serious—a few pounds of added weight, a clog on the whole season's operations; so a 1¾-horse-power engine was decided on. This machine extracted a good crop of honey for the season of 1912; but I decided that there was a slight delay in speeding up the large reel with a capacity of twelve Langstroth frames; and two of these delays with every set of combs made considerable lost time in a day; consequently a 3½-horse-power engine has been bought to replace the first purchased.

The extractor which I ordered was completed and ready for inspection about July 1, 1911. A visit of inspection was made, and every thing appeared all right. Blocks of wood were placed in the comb-baskets as a substitute for comb. Delay in transit resulted, in that the last day of extracting I received notice that the extractor had arrived at my nearest custom-house station. It was, therefore, too late to test the machine during the season of 1911.

During the winter of 1911 I had 18 galvanized iron tanks built for storing honey. They had tight covers, were 6 feet high and 3 in diameter. Each tank has a capacity of 3000 to 3300 lbs. The best and safest honey-gate I could find was put on them, and a strong stand about 14 inches high was built in each apiary, upon which to set the

FIG. 2.—The twelve-frame extractor, engine, and tanks, loaded on a wagon.

FIG. 3.—Two of Mr. Holtermann's helpers removing honey. One holds the frame, and the other uses a brush in each hand.

tank. My object in having these large tanks was to do away with previous loss of time in changing the filling from one small tank to another or from one barrel to another—to strain the coarsest foreign substances, such as wax, out of the honey, and do the rest of the straining by gravitation, skimming the honey when the separation had taken place. For filling, also, a large tank, where one can fill into smaller packages for a 3000-lb. run, is a gain in time. The pressure is better, and thus the honey may be forced out more rapidly at the open gate. With a barrel, for instance, owing to the pressure from the honey above, the first half of the barrels fills more readily than the second. No strainer that can be utilized can be found that will strain honey at the rate of 1000 to 1500 lbs. per hour, and be fine enough to remove the finer specks of wax, etc. One may not see these specks when the honey is liquid; but when the honey is granulated nice and white, they show at once like dust on the surface, and are very objectionable to the uninitiated, such as the average consumer of honey.

The twelve-frame extractor worked well. There is no trouble in extracting with it 14,000 to 15,000 lbs. of honey in a day.

Fig. 1 shows one of our apiaries, July, 1912, which produced sufficient honey to fill three of these large tanks and six or seven hundred additional pounds. The hives shown are the twelve-frame Langstroth. We tiered up supers until the close of the white-honey flow, when all was extracted, but not a comb was taken from the brood-chambers. There were brood-chambers so filled with brood (yes, I must confess my lack of foresight) that several colonies actually starved to death for want of food during my absence of several weeks after the honey-flow. (I have no queens to sell. Many beekeepers have as good queens as I have if they would only overcome their prejudices and give their queens a chance in the twelve-frame brood-chamber.)

MOVING.

A question might be asked as to the practicability of moving this extracting-outfit from one apiary to another. In this matter I was most agreeably surprised. Fig. 2 shows the outfit on a wagon. We took the twelve-frame extractor, turned it on its side, and rolled it through the honey-house door, turning it again to its normal position and pushing it up a plank upon the wagon. The engine shown in the same engraving is the small one; but the larger one can be loaded more readily than the extractor. The other implement on the wagon is the uncapping-tank standing by the driver of the horses.

My outfit cost more than I expected; but I am well satisfied with it. It is a great convenience and labor-saver.

Speaking to the young men who spent the season with me learning beekeeping, I said, "If I had been asked at the outset to buy a 3½-horse-power engine with which to extract, I would not now have a power outfit; but by taking two steps the cost was broken to me by degrees, and I yielded."

We found a difficulty in connection with pumping the honey—the belt slipped. A remedy has been found, however, and I have no hesitation in recommending a power outfit for extracting; but I have no use for the plan of hauling home combs of honey to be extracted. The honey can be extracted in the time which it would take to haul the combs to a central station and back again. Also, where there is any danger of foul brood it is much more liable to be spread by changing or carrying combs from apiary to apiary. Of course, if there is no extracting place it is a different matter. If I wanted to keep myself busy without ade-

Honey-house and Bee-cellar of M. C. Silslee, Haskinville, N. Y.

quate returns, the latter system might commend itself to me.

Brantford, Canada.

A CONVENIENT EXTRACTING-HOUSE AND BEE-CELLAR

BY MYRON C. SILSBEE

I am sending you a picture of my bee-cellar and honey-house which was built in the summer and fall of 1911. The building is 24 x 40 feet north and south, having a cellar of the same dimensions. A partition runs through and shuts off the cellar from the tank-room. The cellar is 24 x 30, and the tank-room 24x12. I have a room above, 24 x 30 feet, which I use for an extracting and storeroom. I also crate and clean my comb honey for market here. The room is ceiled overhead with matched lumber. I have a power extracting outfit, and pipe through the floor. The pipe is three inches in diameter. It conveys the honey to the tanks in the tank-room below, which hold about 4500 pounds each.

There is a door in the north end of the bee-house, 7 ft. high by 3½ wide, through which I carry the honey in from the hive. The door in the southeast corner of the tank-room is 4 ft. wide, through which I carry my bees into the cellar and then through a door 3½ ft. wide through the partition into the bee-cellar.

Then I have a room in the south end of bee house, 24 x 10, where I have a stove and workbench where I extract wax and nail up hives and supplies. There is a double floor of hard pine with building paper between. I have four trapdoors in the floor, 14 x 21 inches, for ventilating the cellar.

The cellar has a cement floor, and is sealed overhead with matched lumber. The walls under the building are laid up in Portland cement mixed 5 to 1. The walls are 3 feet thick at the bottom and 18 inches at the top. I cover the cellar floor with two or three inches of planer shavings. The bees are set on plank 6 inches from the floor with bottom-boards removed to allow all dead bees to drop out during the winter. I generally put the bees in the cellar from the 10th to the 15th of November, and set them out about April 1. The outside of my bee-house is sheeted with one-inch planed hemlock, shiplap, covered with building paper, then sided over.

The chimney on the bee-house is built of cement. Then I have a building at the northwest corner of the bee-house, which does not show in the picture. It is 12 x 15 feet. I have a gasoline-engine, saws, and dovetail cutter, where I saw my hives and supplies; but I would not advise any one to make his own hives and supplies.

I intend to lay up the brace-walls on the east side of my bee-house, and grade up

FIG. 1.—Set up ready to extract with porcelain-lined kettle and washtub in foreground.

to the siding. I have 160 colonies in the yard at present. The picture was taken about Sept. 10, at the close of the buckwheat flow, after some of the supers had been taken off.

The third and fifth colonies in the second row, beginning at the right, produced about 150 lbs. of clover and basswood honey each. The fifth colony in the fourth row, beginning at the right, with two supers on, is a ten-frame hive which produced 100 lbs. of clover and basswood comb honey in beeway sections. I had a number of colonies in the apiary that bore equally well. Most of the colonies that ran for extracted honey averaged about 25 lbs. per week during the clover and basswood flow.

Cohocton, N. Y.

A LIGHT PORTABLE EXTRACTING OUTFIT

BY H. D. MURRY

Some beekeepers hesitate to start outyards because of the expense of maintaining a separate extracting outfit at each yard, or because of the trouble of hauling the ordinary outfit from one yard to another. To such it may be interesting to know of a light outfit that I use. The whole thing does not weigh more than 150 pounds, yet it is effective and convenient.

The extractor is a Cowan reversible, No. 18, with comb-baskets large enough to take two frames each of the shallow frames we use in the production of bulk comb honey. These frames are 5⅜ inches deep. We use them also for extracting; and, although the extractor has only two comb-baskets, we put in four combs at a time, making it equal to an ordinary four-frame extractor. The uncapping-can consists of two galvanized iron tubs of such size that one will just slip down about an inch in the top of the other. We cut out the bottom of the upper tub, leaving an inch or so all around, and put in a bottom of galvanized wire, about four meshes to the inch. A strip of board three inches wide which runs through the handles of the upper tub completes the uncapping-can. Our uncapping-knife is a Bingham of the "vintage" of 1897. It has a much thinner blade than those turned out now, and does much better work. We do not use any water, either hot or cold, as we do not need it with this knife.

For the purpose of catching the honey from the extractor, we use a galvanized iron can 12 inches in diameter and 12¼ inches deep. We tie a cheese-cloth over the can and set it under the gate of the extractor. When full it holds a little over five gallons. There is a molasses-gate near the bottom of the can.

Our uncapping-can will hold all the cappings for one day, the honey running through the wire bottom to the tub below, which must be emptied from time to time. At the close of a day's work we empty the lower can; and by morning, in this hot climate, the honey is practically all out of the cappings. We have found that any honey that might drain out afterward is too dark to suit us. We then melt up the cappings in a porcelain-lined kettle and squeeze out the wax with two boards fastened together at the end. The wax is caught in another galvanized tub, and the slumgum may be saved in a sack to be run through a wax-press later. There is very little wax left where nothing but cappings is melted up. These tubs, with the kettle and honey-can, all nest together, so that they take up only the room in a wagon that one tub would occupy.

We are engaged mostly in the production of bulk comb honey; but we have to have extracted honey to pack the comb, and we find this outfit entirely adequate to our needs. The entire cost is only about twenty dollars; and, being so light, we can put it on a wagon with empty cans enough to hold all the honey our crew will pack in a day. It can be set up in a few minutes after we reach a yard, and we are ready to go to work.

If anybody wants an outfit that will cost $150, and take a pair of good mules to pull, he has my permission; but I have not yet felt the need of such an outfit, and I prefer to use that money in keeping more bees.

Mathis, Texas.

[Mr. Murry does not say how much honey he can extract in a day with his outfit; but since he produces only enough extracted honey to use in packing his bulk-comb we have no doubt but that the outfit has capacity enough.—Ed.]

A PORTABLE EXTRACTING-HOUSE LARGE ENOUGH FOR A POWER OUTFIT

BY V. V. DEXTER

I am using an extracting-wagon which is very satisfactory. It is rather low, but at the same time it pulls easily over the average road. The floor is 7 by 14 feet. The top is about 6 feet high, and made of canvas over a frame of 1 x 2, with 2 x 2 corners, and braced with wire. The whole does not weigh more than the ordinary wagon and hay-rack. I use this wagon not only for extracting, but also for a shop, bunk-house, and dining-car, or whatever I need it for at the yards. As I have no building at any of them it is fine to have a cool bee-tight house to take with me on my trips. I work alone, and care for 450 colonies.

This wagon is exceptionally good in moving bees. I never close the hives. I simply

Fig. 2.—Packed ready to move, with a cake of wax from the tub leaning against the nest of tubs.

Dexter's extracting-wagon, which is large enough for gasoline-engine, capping-melter, etc.

drive up to the yards, take off the horses, load up, shut the door, hitch up again, and drive off. Not a bee can get out; and if a few do leave the hives and fly to the windows, it is easy to give them to the weakest colony when they are unloaded in the new yard; but I am not bothered that way unless it is necessary to stop some time while on the road.

HEATING HONEY AS SOON AS EXTRACTED TO RETARD GRANULATION.

In extracting I use a Gilson engine, four-frame extractor, steam-knife, capping-melter, honey-heater, and storage-tank under the floor. The honey is pumped from the extractor to the heater where it is heated enough to avoid granulation, also to remove all specks. From there it runs to the tank under the floor, the tank being large enough to hold one-half to a day's extracting; and as the honey is warm, it is only a few minutes' work to run 1200 or 1500 pounds into cans ready for market. Heating the honey when it is first extracted does not injure the flavor, as it is apt to do if left till after granulation. I have had alfalfa honey remain clear a year because it was heated *when first extracted.* It is practically impossible to get all the specks out of our thick honey unless it is heated.

My old plan, and the plan of many western beekeepers, is to strain through window-screening at the time of extracting, and, later, heat and strain through cheese-cloth. By the method I now use, the honey takes care of itself till the end of the day, when it can be canned ready for market.

In the picture the tank under the floor does not show, as it was removed after the extracting was done. The door in the front end has been taken out also. It is of cloth, and can be easily taken off.

Practice has proven to me that the front end is the best place for the door. With a slide it is possible for one man to put from twelve to sixteen full-depth supers into the wagon without getting in himself to arrange them. In removing empty supers it is also easy to remove almost as many without the trouble of climbing in.

North Yakima, Wash.

PAINTING QUEENS SO THAT THEY MAY ALWAYS BE QUICKLY FOUND

A Quick-drying Non-injurious Paint that May be Applied with a Wire

BY H. BARTLETT-MILLER

Nothing "straight from the beeyard" having appeared in any of the journals to guide the would-be queen-marker in the somewhat fearsome job of making our black and leather-colored majesties easier to find by means of paint, I determined this spring to find out for myself, and brand every queen in my home yard of 186 colonies. My knowledge that this was possible was gained from a notice in the *Review,* that clear spirit varnish is used to mix the color with. At best this advice was very vague. Some spirit varnishes would kill a fairly strong dog, let alone our delicate queens. Knowing most of the stunts in making spirit varnishes, I decided to use a simple tincture of benzoin, this being merely pure gum benzoin dissolved in alcohol. It can be compounded by any chemist, and a quarter's worth will last a thousand-colony man eight or ten years unless he paints the workers.

This solution of benzoin has a strong but very pleasant scent; and if odor had much to do with our queens, the scent of the benzoin would have led to all mine being promptly balled, whereas not one met such a fate. Its peculiarity for our use is that the paint is dry and washable in a few minutes. In fact, 30 seconds suffices to dry quite a thick application on the queen.

Having obtained a clear liquid tincture, use any dry color you fancy, taking care to avoid red lead or even white lead, as either may kill either the queen or the bees which might try to lick this decoration from the queen's back. I took dry-powder lemon chrome, of which any painter will sell, for a few cents, a sufficient quantity to last a lifetime. It costs about 14 cents per pound.

Take a very small domestic-essence bottle and a piece of wire (say one strand of barb wire) cut off enough to reach to the bottom of the bottle, and to stick up a quarter of

FIG. 1.—Home apiary of Daniel Danielson, Brush, Colo. Through the center of this apiary runs a track for the hand-car shown, which is used for carrying supplies in and out of the yard.

an inch through the cork, through which it must be pierced. Bend the wire over to prevent the cork from coming off. Now flatten with a hammer the other end of the wire to make a spatula with which to apply the paint.

Fill the bottle about half full of tincture, and drop into it any coloring matter handy. Half a saltspoonful of liquid bluing does very well. If you have to use a dry piece it acts just as well. This washing-blue alone I find is too dark. Queens marked with it are very little easier to find than if unmarked; so, mix a little whiting, chalk, dry white clay, or any thing that will lighten the blue, and remember that it dries considerably lighter than it appears in the bottle. Mix yellow and washing-blue for green, as powder greens all contain either copper or arsenic, and we wish to run no risks with poisons, either with our families or bees. The coloring matters are not dissolved in the tincture of gum benzoin, but only mixed in it, and the benzoin only acts as a fastening medium after the spirit has evaporated.

Now for the last time, let us hope, go through the time-honored and time-wasting task of finding madame by adopting the sifting-through-the-excluder method, which is the best idea, except branding, that I have hit upon. Be careful, after the last frame is shaken, not to smoke riotously the bees with a view to hastening the departure of the bees to the lower regions. This was an error I fell into. Too much smoke so demoralizes the bees that they boil over the top of the empty body into which they have been shaken, and her majesty goes with them, and you "dunno where she are," and she has to be let alone while you make another trial elsewhere. Just smoke *gently* the top edge of the body, and keep on going all around it, and in short order the bees will keep turned head downward, and very quickly get through the excluder.

Having pounced upon the cause of all the roar and hubbub, grasp her with finger and thumb by the thorax as though you meant to clip her. I always clip mine, if needing it, at the same time as branding, and with the bottle-neck curled tight in the little finger of the same hand draw the cork with the other hand and apply a fairly liberal dose of the liquid paint on top of her thorax, and a little on the end half of the wing left unclipped. One would think that any bee, black or yellow, carrying a dab of bright yellow paint on her thorax nearly an eighth of an inch square would be seen at once on the most crowded frame; but let madame jam herself between the comb and bottom-bar, and she may hide there all day before you see her; but the colored wing seems to show up directly.

Any way, after branding my first twenty on the thorax only, a week's heavy weather followed; and going over them to test the new adventure, and to count the supersedings, I found none of the latter, and all too

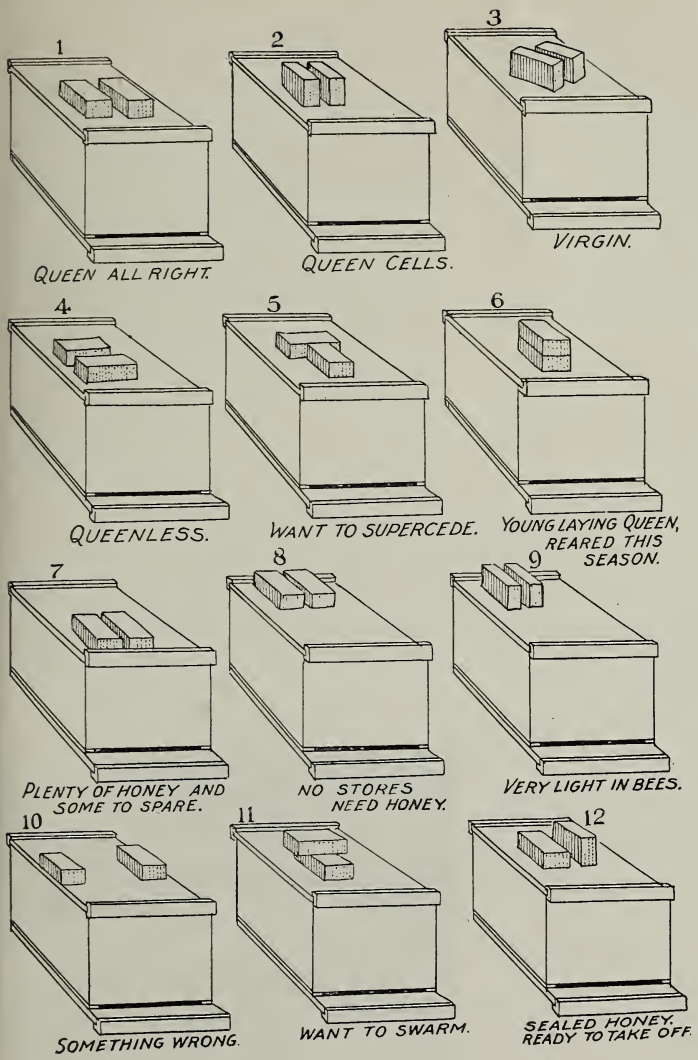
FIG. 2.—Danielson's International auto-wagon, loaded ready for a trip to an outyard.

few of the branded queens—that is to say, without more searching than I had thought would be needed. So I "put some more on," and this time on the end of the wing as explained above, and, presto! "she could not be hid." It was a bit of fun to watch the frantic efforts of first the queen and then the bees trying to make mother look less "dudish." The queen's antics reminded me of a rooster paying court to a hen, dropping one wing and sweeping the ground with it. She tried and tried for fully a quarter of an hour between the sweeping business and fanning to try to unburden herself of this unusual encumbrance. However, three weeks after, they had all grown used to "having 'em all on."

Now, the greatest surprise I received during the whole business was the attitude of the workers toward the queen running fairly fast over the comb, carrying what I declare none of them ever saw the like of before. The scent, too, was strange to them. According to all we are told, the workers ought to have promptly taught that queen proper manners, and to have made her realize that to royalty such "hyper scentsitiveness" was entirely out of place. Instead of that, all who could kept up with her and attempted to lick off the fast-hardening brand.

FIG. 3.—The same truck shown in Fig. 2 transformed into a pleasure-car.

I do not like to suggest to the editor that it was the alcohol they were after; but in the first few cases, lick it off they certainly did, and with very evident relish. So I learned either



to hold the queen until, by the dullness of the paint, I knew it had dried, or else I let her wander around for half a minute on a bare comb. This half-minute seems a much longer time when you have three or four days' branding to do in front of you; but unless the alcohol has quite evaporated you will find your queen, when next you go to her hive, with only the remnants of a brand—far too little to be of practical use to the large apiarist.

A word of caution to the nervous: Brand the queens when holding the abdomen—*not the head*—toward your right hand. I branded one head toward me, and daubed the end of one of the antennæ. I found queen-cells four days after, and no queen. I had noticed this bungling on my part, and had marked the hive for future investigation.

Another caution is when marking the wing. Be careful not to daub the abdomen. If the square end of the flattened wire is just touched on the wing ever so lightly in the center of its length, the wire marker can be lowered till the wing moves toward the marker. When drawing it away it brands the wing. Try a few drones first. Do not be content with the thorax mark alone. If you can see a queen with that mark only, you could, in the case of yellow queens, find her with no mark at all. My queens were marked at the spring overhaul, when no drones had yet hatched. All are very dark, being granddaughters of a queen imported thirteen thousand miles from Italy, and a few queens are black. Old queens were marked with the lemon chromo.

This season's queens are being marked with the washing-blue made lighter by addition of whiting used for fireplaces. Young queens just laying are an exception to the calm behavior noted on the part of the older queens. The clipping and branding so excite the little "newly weds" that in two cases, while some bees were going for the "whisky" on the thorax, others were balling the queen, and I had to use a deal of smoke; and while all were roaring, I shook the queen with a frame of bees at the entrance, and let them all run in together. But the five or six that acted in this way were laying serenely the next morning.

All together I found and branded queens from the whole apiary of 186 colonies in four days, doing a few other items of manipulation as needed, such as filling supers lacking a few combs, and arranging brood in supers when necessary. I judge that one man ought, by the sifting method, to find and brand five queens per hour. But if

you do not happen on her majesty when glancing over the combs as you lift them out to shake, don't waste time looking any more for her; but shake away. Make very sure, too, that your excluder is nailed securely to the bottom edge of the hive-body you use. Don't trust a framed excluder loose. You will bump the body over the edge, and your queen will be gone like a flash. Out of my lot I lost only the one whose antennæ I painted over eleven weeks ago. No branded queen but that one has been superseded, so that the wing-branding can be no detriment.

Kihikihi, Waikato, N. Z.

[We see great possibilities in "branding" queens. A queen easily found at almost any time ought to be much more valuable than one not marked.

Without having tried it ourselves, we should think that red would be the most conspicuous color that could be used, with green, perhaps, a close second.—Ed.]

THE INTERNATIONAL AUTO WAGON FOR OUT-APIARIES

BY DANIEL DANIELSON

A request was made in Gleanings some time ago for ideas from beekeepers who make a practice of running for extracted honey with outyards, and who carry the honey home in the combs before doing the extracting. That is just what I am doing.

I got an International auto wagon, as the pictures show. I have four outyards located from three to twelve miles from home. I carry all my extra hives and supplies on the auto to the outyards, and the honey home in the combs, and the empty combs back.

Fig. 1 shows my home yard with a hand-car on the track, myself sitting on it.

Fig. 2 shows the truck loaded with hives ready to start for the outyards.

Fig. 3 shows the same vehicle ready for a pleasure-ride.

I have done away with all hive numbers and all book-keeping and records, as they are time wasted. I use bricks, as the drawing shows, and I find that they answer the purpose very well. Something is needed to hold the covers on any way, and two bricks will do it in the strongest wind. When I come to the yard, there the record of all the hives is right before me. The bricks show the condition the colony was in when looked at last. I can not see nor find any thing more handy. I have used this method for ten or twelve years.

Brush, Colo.

THE EQUIPMENT OF A SMALL HONEY-HOUSE

BY JOSEPH GRAY

In the ideal small honey-house there should be a platform in the southwest corner of the building 18 inches or any other height desired. Mount the extractor on it with the gate over the tank below, and just east of it, locate the uncapping-can.

The tank is placed below the platform, and a pit is dug in order to facilitate the drawing of honey from the tank. The tank has a division at the east end, with a one-inch honeyway beneath it. By this gravity process all the scum is left at the west end of the tank, and the clean clear honey is drawn off at the northeast side of the tank. Quarter-inch screen wire over the tank, in at least two sections, gives ready access to the tank, and renders it mouse-proof. Cheese-cloth on this screen forms the honey-strainer and renders the tank bee-proof.

The honey is brought in through either door, and one may choose between lifting the supers or bending the back and lifting the combs. No honey is handled heavier than a comb until it is placed in the 60-lb. cans. If a 3-ft. tank is not sufficient ca-

A double-walled honey-extractor. The space between the two cans is for water, and it takes the place of the water-tank of a gasoline-engine. The water gets hot enough to warm the honey so that it strains easily.

pacity. a 6-ft. tank extending under the platform can be installed. An excellent storage place is found beneath the east end of the platform for honey-cases, etc.

The screen windows are on the east and west. The screens should come 3 or 4 inches above the opening, and 3/8 to 1/2 from the side wall. In the morning the bees, both inside and out, are attracted to the east window; and the scent coming direct from the screen does not attract the bees to the exit 4 inches higher up. In the afternoon the bees are attracted to the west window, and so your extractor, etc., are always free from bees; whereas if the screen is placed directly over the extractor more or less bees will be constantly falling in.

I particularly wish to call attention to the door. Never make a screen-door. Let it be solid, so that as few bees as possible will be attracted to its locality. The same idea is followed in the door as in the screen. The door west, being in the shade during the morning, will attract fewer bees. The door east, being in the shade during the afternoon, will attract fewer bees.

Bakersfield, Cal.

THE INTERNATIONAL AUTO WAGON AND PORTABLE EXTRACTING OUTFIT

BY J. E. FARR

If the owner is the driver, and a careful driver, and if he uses one of the International Harvester auto wagons with a high wheel and solid tires, I find there is a saving over the feed of a horse. The horse will cost about 75 cts. per day for feed if you feed him properly. Furthermore, your time is lost, principally on the roads. To do the same work, gasoline costs less than the horse-feed, and nearly all the time on the road is saved.

My west yard is equipped with two buildings. One is a store-house for combs, and the other an extracting-room. I equipped this building with as good an equipment as money can buy. I use an eight-frame automatic extractor driven by a two-and-one-half-horse-power Sandow engine. A rotary pump conveys the honey through pipes to 1000-lb. storage tanks, six of which I have in the one yard.

I thought of hauling combs here to extract, and I tried the plan to my sorrow. Just think of making a trip to an out-apiary, taking off perhaps 1200 lbs. of honey, drawing the combs to the central yard after you are exhausted lifting them on the wagon or truck! You do the same heavy lifting at the other yard, and then return the empty combs after you have washed out your wagon or car, which must be done to prevent robbing. Furthermore, I use thick-top unspaced frames, and I was disgusted at the appearance of those beautiful combs, all bruised and jammed out of shape. If one used shallow self-spaced frames, perhaps they would stand the hauling, but I can not afford to lose the time.

We have a portable and collapsible honey-house, 6 x 6 x 14, which can be moved on a low wagon just as it is. It may be folded down on the bottom. The ends are made of square frames of 2 x 4 stuff, sealed with pine flooring. The lower half of the sides is covered with paroid roofing, and the upper half with wire screen; and I use white oilcloth for curtains, also for the top half. This space is enough to allow the equipment which I have before spoken of, only I use two 1000-lbs. tanks and remove the honey into the cans each morning. This allows the honey to settle over night. As fast as I fill these crates of pails they are loaded on to the truck and left right there until the day's work is done; then for our evening job they are hauled to a barn for storage.

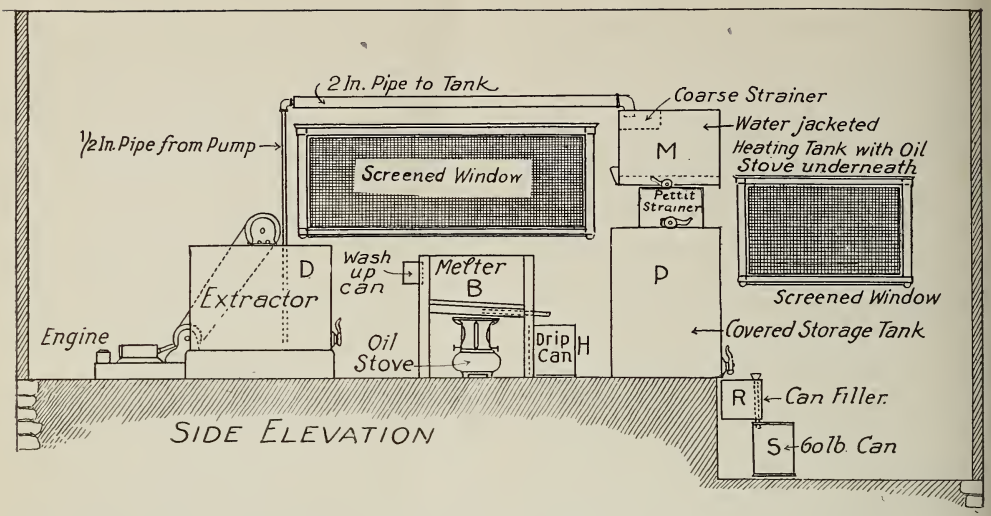
Low Banks, Ont., Dec. 3.

A COMPLETE EXTRACTING-OUTFIT

The Use of Capping-melters, Strainers, Pump, etc., at Out-apiaries

BY E. L. SECHRIST

F. R. Beuhne, on p. 489, Aug. 15, 1911, has, I think, stated the case fairly for and against the capping-melter. During this season I have used three capping-melters, one being the Severin, described in GLEANINGS, page 722, Dec. 1, 1911. The others were the combined melter and McIntyre uncapping-box described on pages 406 and 410, July 1, 1912. Comparing the two, the Severin is small and easily moved. The other is bulky, and adapted only to a permanent location. The Severin requires a two-burner stove, as all the honey contained in the cappings must also be heated while melting the cappings. The combined melter, on account of draining off much of the honey before melting, requires only a one-burner stove, and much less honey is darkened by heating. Again, it is much easier to uncap into a large box than into a small melter like the Severin. The combined melter also takes care of all the drip from uncapped combs waiting to be extracted, so that there is no dripping of honey any-

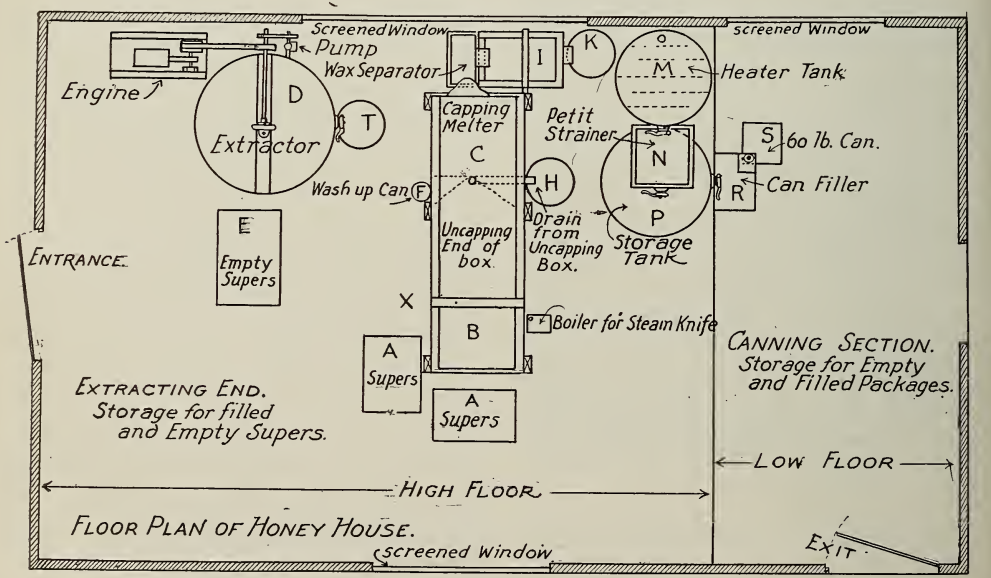


where but in the one box (all the sticky mess in the one box), and no handling of any thing but the honey as it drains off, and the cakes of clean wax as they come from the wax-separator.

I have been much pleased with the Severin wax-separator. The honey is separated from the wax at once, and the wax is produced in clean uniform cakes free from slumgum or honey, and ready for the market. It means something not to have to remelt and mold from three to five hundred pounds of wax yearly.

The engravings show the arrangement of my extracting-house. From the power extractor the honey is pumped to an elevated water-jacketed heater-tank. I was unable to operate the pump satisfactorily on our thick cold honey until it was connected with the extractor-shaft by chain and sprockets, and then it *had* to work. As the honey comes from the pump it passes through a coarse-mesh screen in the top of the heater-tank, which catches any large bits of comb, etc.

Being heated in this tank to about 100 degrees it will readily pass through a fine cheese-cloth strainer. I prefer the Pettit improved square strainer, which has eight square feet of straining surface, nearly all of it vertical. It is illustrated in the *Review* for Jan., 1910. It is far ahead of the round Pettit strainer or any other I have tried. I use it with an additional, very



loosely fitting basket of window screen inside the cheese-cloth. This catches all the scum, bits of wax, etc., which otherwise would soon clog up the cheese-cloth. I have used one strainer continuously, not changing the cloth during a day's run of about 2000 lbs.

The strained honey runs into a covered storage-tank, and, as time permits, is drawn off into the can-filler through a two-inch gate. This large gate permits a rapid flow into the filler which is merely a square can marked at height to hold sixty pounds, and with a bottom sloping toward the outlet. This outlet drops a quarter of an inch into the mouth of the five-gallon can, and is screened with a ⅛-inch-mesh netting to prevent flying bees from dropping into the can when it is being filled. Simply let the honey flow (through a wide open gate) into the filler up to the mark; pull the plug which closes the hole in the bottom of the filler, and go about your business of nailing up cases, or whatever it may be, and, when you are ready, drop in the plug, replace the full can with an empty one, and run the filler full again. With this plan there is no lifting of the extracted honey until it is in the can ready to put into the case. This arrangement for extracting has been a labor-saver for me, as I have, working alone, taken off the hives and extracted in one day 2500 lbs. of thick sealed honey, running nearly all of it into sixty-pound cans.

I bought a second-hand Sears light delivery truck this season; and, although it has given me considerable trouble, I believe there is no other business into which an auto fits so well as beekeeping. It is only fair to say that the truck runs much better now than when I bought it. At one yard I hauled filled supers half a mile to be extracted, and returned the empty combs to the yard. This was very satisfactory; and if roads were good I should like to try hauling every thing to a central plant, which could be thoroughly equipped. Our roads are so bad that it seems advisable to have a fairly complete outfit at each yard.

OPERATION.

Filled supers are brought into the house through the solid door (no screen, and piled wherever desired in galvanized iron trays a little larger than the super, and one inch deep, which catch all the drip.

The operator stands at X, within easy reach of a pile of full supers at A, extractor at D, and super for empty combs standing in tray at E. A second uncapper may stand at the opposite side of the box, near G F. is a gallon can containing water for washing sticky hands, etc. It is hung on a nail on the side of the uncapping-box. G is the boiler for the steam uncapping-knife. Cappings fall on the screen at B, and, after draining as long as may be convenient, are pushed toward the left, off the screen, on to the heated surface of the melter at C, from which the melted mass flows into the wax-separator I. A pail at K receives the honey flowing from the wax-separator. If extracting light honey this should be kept separate; otherwise it is poured directly into the strainer.

The honey draining from cappings, unheated, passes through a trough into the pail at H, and is two-thirds or more of all the honey contained in the cappings, depending on the time it is allowed to drain before melting.

From extractor D, pump L raises the honey through a two-inch pipe for the horizontal run, to lessen friction, into the heater-tank M. A pail at T may be used to handle the honey if the pump is not working. A coarse-mesh screen catches bits of comb, etc., that go through the extractor. This heater-tank has a double water-bottom with a series of channels through which the honey runs, and is heated on its way to the gate. N is a square Pettit strainer through which the honey runs into the covered tank P, then into the filler tank R, and into the sixty-pound cans.

With this plan, all combs are kept in the end of the house nearest the entrance, while all canning of honey and storing of empty and filled cases is in the opposite end near the exit, from which the filled cases are loaded on the wagon.

The bees brought into the house fly to the long screen windows and escape through bee-escapes, or into trap boxes until the work is finished.

Fair Oaks, Cal.

OUT APIARIES AND EQUIPMENT

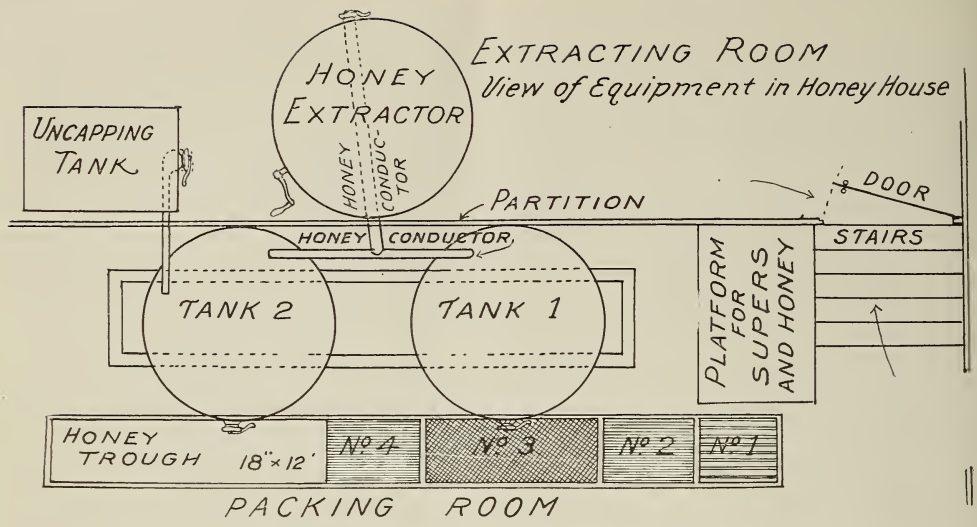
Packing-house for Extracted and Bulk-comb-honey Production

BY J. J. WILDER

The size of out-apiaries makes all the difference in the equipment. It matters not whether they are operated for comb, bulk comb, or extracted honey.

If the honey flora is abundant, large apiaries can be established; and it would be more convenient and economical to have adequate equipment at each apiary.

But if the honey flora is limited, and only small apiaries can be kept, it is better to have one good equipment at the home yard.



If, however, a great number of small apiaries are in operation, there should be suitable equipment at the most central apiaries, and the surrounding ones worked from those centers. If the apiaries are very small, consisting of only 30 or 40 colonies, it is not economy to have even a small building at each yard.

If, on the other hand, the apiaries consist of 50 to 60 colonies or more, it is more economical to use a small cheaply constructed building at each yard in which to keep supplies which are ready for use, and which can be hauled from the main yard, and housed during the more idle time, and be there in readiness for the rush. All supplies not in actual use can be put in buildings of this kind, and protected from the weather. I am speaking from experience and for the South.

As to what the equipment should consist of, it depends partly on the kind of honey produced. But let me first say that at the home apiary and the central outer apiaries there should be at least a cheaply constructed workshop large enough to work in and to hold the stock of supplies, both in the flat and after they are in readiness for the surrounding apiaries. This building should be separate from the honey-house, but near it.

CONSTRUCTION OF HONEY-HOUSES.

Now about the construction of honey-houses economically and for service. A honey-house should consist of not less than two rooms or two separate apartments. Two rooms may be built large enough to suit the room requirements of almost any bee business.

The floor of the rooms should be within a few inches of the surface of the earth, and the floor in the packing-room, at least, should be made of cement, and the sills of the building should rest on a solid brick or cement foundation unless good lasting wood material can be obtained. The material used for siding should be matched or well stripped about the joints; and it is needless to state that the building must be bee-proof throughout—even the wall or partition between the two rooms.

There should be a solid door not less than 3 ft. wide between the two rooms, and one of the same dimensions on the front side of each room, opening from the outside, with sliding screen doors on the inside.

Each room should have not less than two large glass windows, one opposite each door on the side, and one in each end of the room. The entire opening should be covered with screen wire.

A wide smooth shelf or bench constructed across the side of the room opposite the doors will be necessary. In the packing-room this bench is convenient for packing honey, and in the other room it is used in cleaning supers. We call this our super-room. In honey-houses constructed for extracted honey we call this the extracting-room.

The floor of this room is elevated about 4 ft. above that of the packing-room, and steps lead up to it from the door in the partition. We plan for a slight elevation in front of the outside door of this room, in order that honey may be unloaded on a level with the floor. We usually build this room up on pillars of the proper height, and leave it open underneath or remove some of the earth from beneath, and make a storage-room of it.

The honey-tanks are inside the packing-

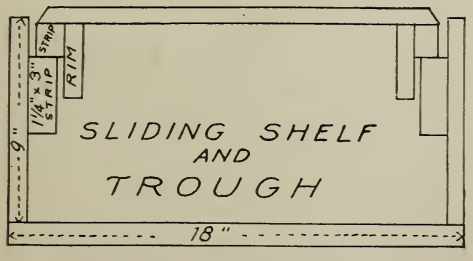
room; and on the other side of the wall up in the extracting room is mounted the honey-extractor, and from it the honey runs through pipes in the wall into the tanks below, from which it is bottled, canned, or barreled. The uncapping-tank also rests against this wall, and the honey passes from it to the tanks in the same manner.

A similar house is constructed and equipped for bulk-comb-honey production. The honey-tanks stand up on two strong pieces of timber with sufficient upright pieces of the same material to support the tanks, which are well braced, leaving it all open under and around the tanks.

If we are fixing up the packing-room for packing bulk honey we erect a platform near the end of the frame, on which the tanks rest, next to the steps. The supers of honey are brought from the extracting-room, where the honey has been graded.

SLIDING SHELF AND TROUGH.

Next in importance is the trough, which is zinc-lined, or made water-proof, with a honey-gate at the rear end. The bottom is so put in as to be about two inches on the decline to it. This trough is movable, and rests on timbers so it can be moved up or down a few inches to suit the height of the vessels to be filled. It rests about three or four inches back under the honey-gates of the tanks. The cans to be filled can be passed just under them on sliding shelf No. 3. About two inches from the top of this trough, on either side, is nailed a strip 1¼ x 3 in., and sliding shelves No. 1, 2, 3, and 4 rest on this strip. These shelves are formed on rims made of one-inch lumber about 3 in. wide, which just fit down between the strips on the trough, leaving



about ¼ in. of play; and on either side of these rims, even with the top, is nailed a strip 13-16x1½ (see diagram). This forms the slide, and on top of this is nailed the shelf, which makes it just a little above the top edge of the trough, and they can be lifted out or moved along in it as may be most convenient. The honey that may accumulate on these shelves can be scraped off or it will run off into the trough.

Now, regarding the use of these shelves on which all our bulk comb honey and most of our extracted honey is packed, shelf No. 1 is covered or made of slats on which the supers of chunk honey are placed, one at a time, at the right of the packer, who stands in front of shelf No. 2. This shelf has a heavy zinc covering over it, on which frames of honey one at a time are placed from No. 1, and the honey is removed by passing a sharp knife around close to the frame. The frame is then removed and placed on the frame-rack over the tanks, to drain for a while. The honey is then cut in strips the size that will best fill the utensils through their mouths endwise. Thus wider strips may be placed in a larger-mouthed vessel, and smaller for small ones. The strips of honey are lifted from the shelf by passing the blade of the knife under them one at a time, and placing them in the vessel until neatly filled. The can which is being filled is held with the left hand, and then is set on shelf No. 3. This is the duty or task of packer No. 1.

Shelf No. 3 is covered with fine screen twice double, which passes all the way around the frame. It is drawn very tightly and is nailed securely. Then the strips on either side, upon which it slides, are nailed on.

Packer No. 2 passes the vessels thus filled, one at a time, on this shelf under the honey-gate, where they are filled with extracted honey, after which they are set on shelf No. 4, which is covered solid with a board. Here the honey is sealed and labeled. Any honey that may be on the outside of the cans is cleaned off, and they are put in crates ready to be nailed up. This is the duty of packer No. 2, and these two packers put up nearly 2000 lbs. per day.

Shelf No. 2 has a slightly oval surface, so the honey oozing from the cut comb will run off; and when it does not, it is quickly removed by passing the blade of the knife over it.

Shelf No. 3 has a smooth surface. All the honey that may drip from the cans, which is usually a considerable amount from both the honey-gate and the work of packer No. 1, will pass down through it into the trough.

All the best extracted honey is run into tank No. 1, and is packed with the fancy comb honey in glass vessels. The darker grades of extracted honey are run into tank No. 2, and are packed with the off grades of comb honey in tin vessels. Also the honey from the uncapping-tank runs into this tank. When we are filling cans at tank No. 2 we arrange the sliding shelves about it in

the same manner as we do at shelf No. 1. I use the common galvanized 3-inch water-conductor pipes to run honey into the tanks. The conductor running from one to the other is about two inches above the tanks, and the one running from the extractor runs into it. This conductor is separated by the one from the extractor where it passes through the wall; and if we want to run the light honey from the extractor into tank No. 1 we raise the end of the conductor over tank No. 2, and it turns the honey into it. This is done by the man at the extractor by means of two cords, one attached at each end of the conductor. These cords pass up through the wall at the most convenient place for the man at the extractor, who can change the current of honey by loosening the cord for one end and tightening the one for the other.

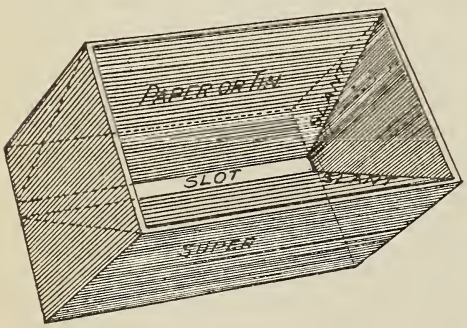
Cordele, Ga.

GETTING BEES OUT OF SUPERS WITHOUT A BEE-ESCAPE

BY C. A. BUNCH

Last season I used a simple device in taking off one and a half tons of honey for clearing supers of bees quickly, which does not demoralize the bees in the hives, but leaves them in fine condition to defend themselves.

The drawing makes the plan clear. I used a ten-frame full-depth super, and on the under side, ¾-inch apart, I nailed two



square sticks in the center. Then I cut two thick pieces of wrapping paper, 8 inches long, which I tacked to the upper side of the super; then I brought the lower edge down and tacked it to the parallel square sticks, thus making a V-shaped arrangement with a narrow slot at the bottom.

I set this prepared super on an eight-frame super, and cleated both ends, which made it ready for use. When I am ready to take off honey I set the whole thing near the hive, remove a super and set it on the cleaner (placing a robber-cloth over the hive if necessary. As I use loose hanging frames without spacing devices I loosen all of them with a screwdriver and slide them over toward the opposite side of the hive. Then with a head of broom corn I begin brushing the bees down without taking any frames out of the hive, pulling them over toward me as I get them clean of bees. When the bees strike the incline below they slide down and out of the slot into the eight-frame super before they can take wing, and most of them will be clustered below. There are cleats across the end of the super to furnish a grip for the hands, and I empty the bees out by lifting the super and giving it a sudden jar on the ground in front of the hive after all of the supers have been cleared of bees.

Of course I use some smoke at the time when I begin brushing. As soon as the nearest side of the first comb is free from bees I pull it over toward me, then brush the bees from the opposite side; then go to the next one, etc.

Lakeville, Ind.

HONEY-TANKS BELOW THE EXTRACTOR

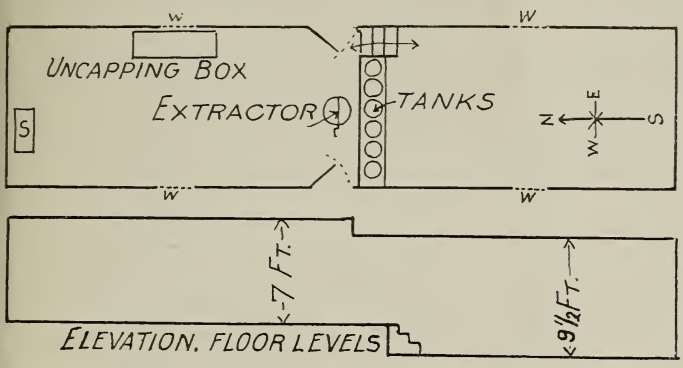
Moving the Extractor from One to the Other

BY J. D. EVANS

My bee-house is 16 x 25 feet, and 7 feet high at the eaves. There is a stone wall under all. There are two floor levels, and at the south end 4 feet 6 inches lower than at the north end. A stone wall separates a hold-up of earth at the north end. Across the lower half is a plank bench on which six tanks holding 500 pounds each can be placed. This platform is two feet high, and leaves room for scales and a 60-lb. can into which the honey is run from the tanks. The extractors stand on the high level; and the honey, as fast as it is extracted, runs into the tanks, which are covered with cheese-cloth. This is all the straining required, as the honey is left in the tanks until they are required for the next extracting. I think a strainer in an extractor must be an abomination. When one tank is filled the extractor is moved to another place, and so on until all are filled.

My house has five windows—two in the west, two in the east, and one in the south gable. Two doors opposite each other are used. The yard is on the west of the bee-house, and the floor is level with the ground on that side. On the east side the land is about three feet lower than the doors, which makes it handy in loading the honey or taking in supplies.

I have a chimney on the north end, and a stove for melting wax or making feed. I have a floor 7 feet above the north floor, and one 9½ feet above the south floor. These floors do not quite meet in the middle; and as one is 2½ feet higher than the other, with an ordinary step-ladder costing 75 cents there is no trouble in getting upstairs; and I can stand on the floor of the extracting part and hand up any thing I wish to the south upper floor; and when up I can pass it over to the north floor.



This house is bee-proof and mouse-proof, and the combs are stored in winter in the lower level, nine stories high. The upper floor south is cut back over the step so as to leave head room. The diagrams will illustrate this.

Islington, Ont., Feb. 1.

THE AUTO TRUCK FOR MIGRATORY BEE-KEEPING

BY W. W. VICKERY

There have been some inducements for migratory beekeeping in our river-bottom cornfields, where, by selection at favorable fall seasons, we command pasturage almost solid with vines and other honey-plants on 3000 to 4000 acres, all cornfields, every acre of which is honey-bearing.

The auto truck has been a quick and convenient way of moving bees to and from these fields, and it often saves two hours on a six-mile and return trip.

Hives should be bound with twine and securely screened, and, if moved at night, promptly after loading, are not apt to smother if properly ventilated. I would advise extra care in tying the load on firmly in addition to the wrapping of hives. The vibration and danger of bumps in the road would make stapling unsafe.

There has been a much greater test on our Reo truck in delivering groceries every day than the occasional trips demanding service in the capacity of hauling bees.

Bees hauled in daylight would be safer if covered over with tarpaulin, or curtained down all around. A lighted smoker at hand will save time where a leak occurs.

WINTERING REPORT.

I have just inspected 88 colonies of bees, and find some loss, owing to warm January (39 degrees average), followed by the severely cold weather the first half of February. Fifteen colonies were lost; twenty had to receive combs from heavy ones, of which there are still over 40 in first-class condition. Some colonies lost had considerable brood and honey. Does water carried in for feeding cause extra exposure? or when brood is started and the cold weather prevents any more trips to the source of water supply, does loss result? We have water in a ditch ten feet from the hives. Temperature 65 degrees, no pollen; bees robbing and hunting honey where bees are dead.

Evansville, Ind.

[We do not know that we quite understand you when you ask, "Does water carried in for feeding cause extra exposure? We suppose that what you mean by this is, "Does the water carried in cause more brood-rearing, and does that extra brood-rearing require the bees to expand their cluster to a larger size?" Yes, in such a case a cold spell coming on would do damage to the cluster and to the brood. We do not think water is absolutely necessary for brood-rearing, because we have had a large amount of brood hatched in our cellars. Last winter some colonies began brood-rearing in December and January; and when we took them out on the 12th of March they were much stronger than when we put them in. The bees were bright and healthy. Certainly the bees in the cellar could get no water except what might have condensed under the hive-lids. At one of our cellars there was some condensation, for water stood in drops from some of the hive lids; but in the other cellar, where the temperature was higher, there was no condensation, but brood-rearing went on just the same from December to March 1.—ED.]

Heads of Grain from Different Fields

Making Labels Stick on Tin; Beehive Scales for Recording the Honey-flow; Entrance-controllers; Bees vs. Cane Sugar for Bees

1. I have trouble in making the labels stick on the honey-pails. They always come off as soon as dry. Is there any preparation made that will make them stay?

2. Are the ten-frame hives made wider now so that we can use a division-board? With the ten-frame hives I now have it is almost impossible, especially in the fall, to get out the first frame.

3. I notice in my Swiss journal a scale made on purpose for beekeepers, and also entrance controllers. These platform scales would surely be much handier than the scales we have. The entrance-controllers made out of steel screwed on the hives and left on the year round would be much better than wooden blocks.

4. How much do you consider a colony of bees worth in a well-painted ten-frame hive in the early spring, having wired worker combs?

5. The past season I had a very unusual case with a young queen. While putting back the last frame I noticed the queen hanging on to a frame apparently dead. I picked her up, held her in my hands for about five minutes, when she commenced to show a little life; then in about five minutes more she commenced to take short breaths. Then I put her on top of a frame. The bees started to feed her, and in about ten minutes more she seemed to be all right. It certainly looked as if she had actually fainted. I am absolutely certain I did not hurt her while manipulating the frames. What do you think could have been the reason of her acting so strange? The bees were somewhat cross, and I had to smoke them considerably. Could it be that the young queen was so frightened by the smoke that she seemed just like dead? In my twenty years of beekeeping I have never seen any thing like it.

6. Recently I read in a farm paper that sugar syrup made from beet sugar, and fed to the bees, will kill them during the winter. Is there any truth in the above statement?

7. Do you consider the metal-spaced Hoffman frame superior to the regular Hoffman frame?

8. What reasons does Dr. Miller give for not painting his hives?

G. A. Barbisch.

La Crescent, Minn., Jan. 21.

[1. It is very difficult to make labels stick upon tin unless the labels go clear around the tin package itself. You can purchase a dextrine that answers a very good purpose, 3 oz. for 5 cts.; ½ lb., 10 cts. Some have recommended using a little honey in connection with the dextrine.

2. The ten-frame hives are now made wider so as to take in the division-board the same as the old eight-frame hive used to do, and does yet, for that matter. We do not regard it as practicable to have contractible entrance-closers, as we believe that all such devices of that kind are a useless expense. An ordinary block with an opening on one side is very much cheaper than and quite as effective as contrivances that cost many times more.

3. Most of the spring-scale concerns in this country furnish good scales for platform work and for weighing hives of bees while the bees are gathering honey. You can secure such scales from your dealer in bee supplies.

4. The price of a colony of bees in a ten-frame hive will vary according to the season. In the early part of the year, in the spring, they are worth a great deal more than they are later on after the honey-flow is over. You can buy common bees, hybrids or common blacks, of the farmers, in box hives, for a very small sum of money. The bees must be transferred and put into modern hives. After that they should be Italianized in order to bring them up to the standard of the bees sold by supply-dealers. Taking it all in all, cheap black bees are not very cheap in the end. Such colonies as you describe, if of good strength, should be worth about $5.00. If nice Italians, $10.00 to $12.00.

5. From your general description here it is evident that the queen had what is called the "cramps." Very often a queen, if she has been handled or injured, or struck by a frame in removing it from the hive, will appear as if she were dead, and it will be some minutes before she recovers. The bees will hover around her, feed her some, and in the course of a few minutes she will be as lively as ever. We do not know just what is the difficulty; but we have always called it the cramps.

6. Our experience is that beet sugar is practically as good as cane sugar for feeding bees. We never make any distinction. We buy this sugar just as it is on the market, and we suppose a good percentage of it is beet sugar. No chemist is able to detect any difference, and we doubt if there is any.

7. Yes, we consider the metal-spaced Hoffman frames as very much superior to the ordinary wooden Hoffman frames. They are easier to handle, and are stronger.

8. Dr. Miller's main reason for not painting his hives is on the ground of economy. He said the hives will last as long as he can ever use them without the paint, and he doesn't see any reason why he should go to the extra expense of painting; but most beekeepers do not agree with him in this.—Ed.]

A One-inch Hole Punched in the Upper Part of the Foundation to Give a Passageway to all the Combs

When I put brood foundation in wired frames I punch a hole one inch in diameter under the top wire. This gives the bees access to all the combs. Otherwise they would be compelled to go over the top-bar, under the frames, or around the sides of the frames, for their stores. It also gives the queen the same opportunity in brood-rearing. I have lost many colonies in years past when there was an abundance of honey in their hives, and I find the above plan is all right.

Conesus, N. Y., Jan. 8. D. W. Trescott.

[Holes left this way in the combs would be filled up with drone-cells and honey after a good honey-flow. Years ago it was the practice on the part of a few beekeepers to insert a tin tube about ½ inch in diameter in the center and near the top of the combs. The tube would not be as likely to be filled with comb as a similar hole without the tube.

It was thought at one time to be a good practice to cut holes in brood combs at the approach of winter; but it has been abandoned by almost all beekeepers, so far as we know, and in its stead has come the Hill device, or a space over the top of the brood combs, enabling the bees to pass back and forth over the top instead of through the combs. For the Langstroth frame, space on top is preferable to unsightly holes that do little or no good to the combs.—Ed.]

Can the Doolittle System of Producing Comb Honey be Used in a Locality where there is no Late Flow?

I received a copy of "A Year's Work in an Outapiary," by Doolittle. The plan looks good to me, as I am a farmer beekeeper with about 20 colonies and the minimum time to give them; but I do not have the extra frames of combs he uses at fruit

bloom. Could I use full sheets of foundation? and what would be my chances for success by using it?

Sometimes fruit bloom does not yield much nectar with us. Would it help matters to feed thin syrup, as per the Alexander plan? or do you consider the "millions of honey at our house" sufficient? Any other suggestions you will give would be thankfully received.

Auburn, Ind. W. J. CARNAHAN.

[The Doolittle system of producing comb honey is more practicable in a locality where there is a late honey-flow. If you do not have such a flow you could not very well use it to advantage. It would not be practical to feed as you suggest, because a good deal of the honey in these combs that are held over from the previous season would go up into the sections; and, of course, ordinary syrup could not be used in that way without getting the producer in trouble with the State and national pure-food inspectors. You can, however, carry out the general principle by feeding the colonies up very strong the year previous, so that they have plenty of stores; but the plan of putting an extra set of combs filled with syrup over the top of the colony to make them "rich in stores" will not work, provided it is sugar syrup for the reason already mentioned.—ED.]

Feeding Soft A Sugar on Plates Made of Wire Cloth

Why so much discussion about feeding soft A sugar to bees in the cellar? If the colony is small the paper pie-plate can be used without fear that the condensed moisture will do any great harm. I take the covers off my hives when I put them in the cellar, and place a burlap sack over the hive. Now, I believe I can feed the bees by placing the sugar in plates made of window-screen (wire), and placing the dish over the tops of the frames and covering all with one or two sacks according to the strength of the colony. The bees can cluster under the sugar, and take it up without exposing themselves in any way.

Interlaken, N. Y., Feb. 17. JOHN T. GREENE.

[We believe it to be perfectly feasible to feed soft A sugar on wire-cloth trays or plates; but we wish to make the suggestion that the black wire cloth be used rather than that painted with green paint, as the latter would be poisonous. Where it is not practical to use the wire cloth the paper pie-plates can be used. The sugar should be placed in the plates, and then there should be a couple of cross-cleats placed over the top of the plates, so that, when the packing material is placed down over, the bees will be able to get at the food.

Mr. A. C. Miller expressed the fear in our columns recently that a paper pie-plate would become soaked with moisture and be utterly useless. We do not find this to be the case. Notwithstanding that, in some of our colonies, there is considerable dampness, the plates hold their shape perfectly.—ED.]

Feeding Soft Sugar in Paper Pie-plates to Bees

I went over my bees yesterday, and found two swarms low in stores. I took a paper pie-plate and cut slits in the bottom and set this on top of the frames. I cut slits in the bottom to allow the bees free access to the same. I then filled this pie-plate with soft A sugar, and pressed another pie-plate down over it, bottom side up of course. Over this I put a newspaper and then the chaff-bag. I treated two colonies in this way. I believe this sugar packed in this way will stay in shape as well as candy will. Certainly it will after absorbing moisture from the bees. If this moisture soaks up the plate so as to make it soft and pulpy, it will be all the better for the bees. The plate will then have served its purpose, and will be easily gnawed away by the bees. When this sugar is gone I will repeat the operation with new plates. Two plates put together this way will hold one pound of sugar. If you would like to know how this scheme works out I shall take pleasure in giving you an accurate account of it.

Stillwater, N. Y., Feb. 9. ROB'T W. SCOTT.

[We believe the plan of using paper pie-plates as outlined here by our correspondent to be a good one, although if there is a slit or slits in the bottom of the plate it might be better to use something like ordinary queen-cage candy, made by mixing powdered sugar and honey into a stiff dough. We shall be glad to have our correspondent tell us of the success of this method of feeding this coming spring. —ED.]

Feeding Soft Moist Sugar Direct; who First Used it?

Referring to GLEANINGS, Feb. 1, p. 81, Mr. A. C. Miller says he thinks that the credit of feeding sugar to colonies of bees should be given to Samuel Simmins. I may say that I was visiting an uncle at Withersfield, Suffolk, England, in 1852 or '3, and he had bees in straw skeps. I remember seeing him feed them sugar (then called brown or moist sugar). He fed them in a tube made of the common alder wood with the pith removed and the top split out so it was in the shape of an inverted horseshoe, and inserted it in the entrance at the back of the hives. I do not know, but would suppose that feeding moist sugar to bees was a common practice in England 60 years back, as at that time I was 10 years old; and if all is well I shall be 70 next April; but I remember this circumstance.

St. Louis, Mo., Feb. 10. CHAS. W. COLLETT.

[The feeding of brown sugar or moist sugar to bees is a very old idea; but whether any one, however, has ever fed a coffee A sugar before that recommended by Mr. Simmins we do not know.—ED.]

Wiring, and Alfalfa in Ontario; Timber for Hives

1. Is it practicable to do the wiring when nailing frames together in winter, and put in the foundation as needed?

2. Is alfalfa considered of any value as a honey-yielder in Old Ontario? It is no good in New Ontario.

3. What is the objection to spruce and poplar lumber for hives?

Slate River, Ont., Can., Jan. 22. J. M. MUNRO.

[1. It is the usual custom to nail or put together frames during the winter time, wire them, and put in the foundation at the same time. We see no reason why you should put in the foundation only as fast as you need it. If you have it in stock it should all be put in at one time. During the busy rush of the season you can not afford to take the time to put foundation on the wires.

2. In most of the territory east of the Mississippi River, alfalfa does not yield honey to any considerable extent. We are not able to give you any opinion concerning its relative honey value in Old and New Ontario.

3. Spruce is a very good lumber, but rather narrow, and rather too tough and hard for the purpose of making hives. Poplar is too much inclined to warp and twist. There is no timber in the world that is altogether the equal of ordinary white pine, such as is found in Michigan and Canada. The redwood of California makes a very excellent substitute, however; but it has the objection that it splits very readily, and is not suitable for making the inside fixtures; but it will stand the weather much better than pine.—ED.]

Poisonous Spray During the Blooming Season Injurious to Trees as well as to Bees

I was invited to make an address at the State horticultural meeting of Missouri, held in 1906 at Moberly; and while at that meeting I had the endorsement of some of the very best horticulturists present, that to spray with poisonous ingredients during blooming time would destroy the prospect for fruit on trees so sprayed. Mr. J. C. Evans, who had been the president of the society for more than 20 years, and a man of very large orchard interest and experience in spraying, stated that he had tried it most thoroughly during the blooming period, and he was entirely satisfied that it would kill the prospects for fruit.

One man having extensive orchard interests had sent in a paper to be read at that meeting, and in it stated that he did not know any reason why he should not spray during blooming time, as he considered his orchard interests worth more than all the bees around him, but also stated in his paper that he had sprayed during blooming time; but for some reason to him unknown his trees had set but very little fruit.

Mexico, Mo., Mar. 22. J. W. ROUSE.

Fruit-men Borrow Bees to Place in their Orchards During the Blooming Season

I am located right in the middle of the peach region; and at first, when the tree-spraying began, I had some trouble, and had to distribute some of your free literature about spraying to show the fruit-men their folly.

It may be interesting to you to learn that now the fruit-growers so value the bees in connection with the fruit-bloom that they borrow my bees, and carry them to their orchards, and bring them back when the bloom is over.

The spraying of peach trees is done just before the blossoms begin to swell to any size—about two or three weeks before opening; but in case they fail to get it done at the right time they prefer to put it off rather than to do it when the trees are in bloom.

Port Clinton, Mar. 28. JULIUS JOHANNSEN.

Bees Brought Pear Blight

If you see the fool-killer, send him out here. The ranchers sprayed their trees with a strong solution of arsenate of lead for codling moth, and it burned the tender twigs where they used high pressure on the blooms before the petals had dropped off, and the wise fruit inspector told them it was "pear blight" packed there by the bees during bloom. His argument was convincing, for there was the dead bloom; also the dead limb.

Walla Walla, Wash. C. A. MCCARTY.

How to Color Queens Red

As to your question in GLEANINGS, Jan. 1, 1913, under Stray Straws, regarding the marking of a queen red so that the coloring won't come off within six years, I can tell how it is done in my native country, Switzerland. I don't know, however, from what the coloring matter is made. It can be bought out there by nearly every queen-breeder or supply dealer. It is a fast-drying varnish. Before using it, stir it well. It should not be too thick nor too thin. Otherwise it will not stay on, and will spread. Put the queen under one of those marking-nets made of mosquito-netting, or from an old veil, to keep her quiet. Put a little of the coloring matter on a small sharp wooden stick, and rub it lightly on the back of the queen's breast where it will dry quickly. Then remove the netting.

Highland, Ill., Jan. 6. XAVIER WIDMER.

Heating Honey Before it Granulates

There is an article in the *Review* for January, by Virgil Sires, North Yakima, Wash., on his process of heating honey as it leaves the extractor, and wherein he claims that honey heated then will keep liquid longer than when allowed to candy first. Now, this is vital to our business. I should like to see the matter discussed in GLEANINGS. Who else so believes and does it? Who knows it is true? Who has a process to heat honey just right to keep clear, and *not materially* impair the flavor?

Utica, Ill., Jan. 31. A. MOTTAZ.

[Occasionally, when granulated honey is liquefied, certain parts of the honey are not reduced entirely to the liquid form, owing to the distribution of heat having been faulty. This possibly accounts for the belief that honey which has been heated before it granulates remains liquid longer than if it is heated after granulation, for it is a well-known fact that, if the honey is not entirely liquefied—that is, if there is any portion of it still somewhat cloudy, owing to minute crystals, *that* honey will granulate again in a very short time; whereas if all traces of crystallization were removed, further granulation would be postponed a much longer time. We do not know that this accounts for the belief expressed by Mr. Sires, but offer it merely as a suggestion. In this connection see the statement by V. V. Dexter, p. 219. —ED.]

One who Does Not Like Autos

I am glad you issued your automobile number on April 1, 1912. It was the biggest April-fool number I ever saw, and I have taken GLEANINGS for years. I believe you believe in temperance. So do I. I believe you do all you can to fight the liquor traffic. So do I. But I want to tell you that the autos and motor-cycles are a worse curse to the rural population than the liquor-traffic. Some people tell us the auto has come to stay. I tell them that the Devil has come to stay too, and that the day is coming when the Devil and the autos and a good many people who own them and run them will all be in one place, and they will be there to stay.

St. Anns, Ont., Feb. 4. HERBERT FREAS.

[You have a perfect right to your opinion in regard to automobiles; but there are hundreds of bee-keepers in this country alone who own them, and who would hardly know how to get along without them now. The day has passed when automobiles, at least those which are moderate in price, and which are used for business as well as pleasure, are considered only as expensive luxuries.

In regard to the April-fool number of last year that you refer to, we received one other letter from a beekeeper who did not like that number. Since its appearance, however, we have received so many letters of appreciation from others of our readers that we have kept no record of them. We can not expect to please all of our readers all of the time. We know that for a time last year there was scarcely a day that did not bring one or more letters of appreciation for that automobile number, and requests for another one this year.—ED.]

A Side-hill Facing East for Bees

I have had no experience, but think my present location suitable. It is on a side-hill facing east —rocky ground, and somewhat wooded. Will you advise me as to the suitableness of the location?

Mt. Hope, N. Y. WM. EDWARDS.

[The location, apparently, would be a good one. We prefer to have the bees screened from the prevailing winds; and it is also a good idea to have the apiary or the hives located in some low shrubbery, both for the purpose of shade and to protect the bees against heavy blasts of wind. This is very important in the matter of wintering.—ED.]

Our Homes

A. I. ROOT

(A sequel to the Home papers of Feb. 1.)

Go ye into all the world and preach the gospel to every creature.—MARK 16:15.

But seek ye first the kingdom of God and his righteousness, and all these things shall be added unto you.—MATTHEW 6:33.

O thou of little faith! wherefore didst thou doubt? —MATTHEW 14:31.

I have been reminded that in my Home paper of February 1 I omitted, or touched on very lightly, one great reason why the circulation of GLEANINGS was increased so rapidly at the start. By request I will briefly go over the points I omitted. Just a few days after I came out publicly for Christ Jesus, our good pastor, the Rev. A. T. Reed, came into my store one day and said something like this: "Mr. Root, there is to be a missionary meeting next Sunday evening, and I want you to take charge and talk to the people." I replied to my good friend (for *then* I was ready to do almost any thing in the world for him) that I was sorry to say I had very little acquaintance with missionary work; furthermore, that I had very little sympathy for or interest in it. He, however, said he would lend me a book about the Sandwich Islands, and I could read the book between then and Sunday, and then he was sure I could give them a talk on it. I again protested gently, saying that the subject of missionary work had always been exceedingly dry and uninteresting to me; and if there was any thing in particular that made me feel sleepy it was a talk about the *Sandwich Islands.* He laughed, and (I think) replied that perhaps I would see things *now* in a light different from what I had formerly. I have forgotten now the title of the book, but it was a history of the work of the Rev. Mr. Gulick, one of the early missionaries to the Sandwich Islands. As I was a very busy man at that period of my life, not only through the day time but often well along into the night I was wondering how I should get time to read that book before Sunday night came. However, I carried the book home and laughingly told Mrs. Root that I had promised to read it during the week. I looked over in the back part to see how many pages there were, divided up, and said something like this: "Sue, I shall have to read so many pages Monday night, so many Tuesday night, and so on until I get up to Saturday night." Accordingly on Monday night I arranged my work so as to get home a little earlier, and went for the book to read the allotted portion laid out. When it came bedtime Mrs. Root suggested that it was time to go to bed; but I replied that I rather *liked* the book, after all, and did not want to go just yet. Pretty soon, said she, "Why, you have gone away past the part you had marked out to read Monday night. Hadn't you better come to bed?"

I think it was well on toward midnight before I was contented to let the book drop; and I had not only read it through long before Sunday night came, but read parts of it again and again. It was not only a revelation to me, but a *wonderful* revelation, as to what missionaries had done in the way of opening up business in foreign lands and the islands of the sea, aside from the work of converting savages and cannibals and teaching the gospel.

As it was pretty well known in our community at the time that I had been heretofore more or less in sympathy with skepticism and infidelity, quite a turnout to my talk that evening was the consequence. I not only occupied an hour talking about the Sandwich Islands and missionary work all over the world, but I hadn't got half through with my story when the hour was up. The result was, the prophecy of my good mother came at least partly true at this time of my life. I not only hunted up every thing I could get hold of in regard to the foreign mission work throughout the world, but I talked with friends who had relatives in foreign lands, and finally got so full of the idea of "spreading the gospel" that I announced in the next issue of our then very young (and small) bee journal that, if the friends who had relatives or acquaintances in missionary work in foreign lands would send me their names and addresses I would send them our little monthly, GLEANINGS IN BEE CULTURE, free of charge for as long as they cared to read it. Now, here came one of my first "happy surprises." I was so little posted in regard to foreign missions that I did not suppose there were more than a dozen or two all over the face of the earth, including the islands of the sea; but when applications came from far and near, and letters of sympathy with the work I had undertaken, I was greatly surprised. One of our faithful clerks remarked to me about this time (the one who opened the mail), "Mr. Root, I fear you have been a little reckless. There are not only many more missionaries in the world than you supposed, but the postage on most of the journals will be twenty-four cents a year, and on some of them forty-eight cents a year. Hadn't you better recall your offer in the next issue?"

My reply was something like this:

"My good friend, don't worry about the number of GLEANINGS that are going at our expense to foreign missions. The great Father above will furnish the stamps, I am sure."

In a little time we had kind letters from almost every part of the world, and these good friends told me about the bees and bee culture in their locality. I distinctly remember one missionary who said something like this: "Mr. Root, your little bee journal has been a Godsend to me and the natives here. I had been for some time past praying and studying over the matter of how I should find something to enlist their interest and attention so I could get better in touch with them. By the directions contained in your little journal I succeeded in making a movable-frame hive; had captured some bees, and finally announced to the natives that I would take a hive all to pieces and show them the work of the bees, and point out the queen, etc.

"Now, this little object lesson proved to be more entertaining and instructive than any thing else I had ever been able to get hold of, brought from civilization. May God speed you in your good work."

From that time to this we have had more or less pleasant relations with missionaries and the missionary work in foreign lands. The great Father above *has* furnished the "postage stamps;" and not only that, he has opened up trade and commerce in hives and hive fixtures all over the world in a way that could not have been done otherwise. In fact, orders came right along from foreign countries in languages that we know so little about that we have an interpreter in New York, besides a pretty fair interpreter here in our own office, to read and translate orders from foreign lands in different languages spoken throughout the world.

Another of the texts that I have given above has been abundantly verified: "Seek ye first the kingdom of God and his righteousness, and all these things shall be added unto you."

Now let me pause a minute to ask you what the consequences would have been had I, as so many of us often do, refused to accede to the request of my good pastor. Somebody asks you to teach a class in Sunday-school or to take charge of a Bible class, or to lead a prayer meeting or something of that sort. You (or *we*) forgetting the abundant Bible promises, make the excuse that we are not posted, or we are not adapted for that class of work, or perhaps that we are not "built that way," so neglect the opportunity. How much should I have lost if I had assured dear brother Reed that I was *totally incompetent* (which was true) to lead a missionary meeting, instead of taking the book, as he requested, and looking into it with eyes that were *no longer blind* to the words that God has sent us. The injunction to go into all the world and preach the gospel seems to me to belong not only to *ministers* but to every creature who has found "the Lamb of God who taketh away the sin of the world." The responsibility rests upon our shoulders to redeem the world, not only from cannibalism and other sins, but to redeem *our own nation* from the dangers that are coming to beset more and more its people.

Not only is our journal now going regularly to every spot on the earth where missionary work is going on, but it is taken regularly by great numbers of people who do not speak our language at all, and many of them can not read it at all.* They look at the pictures and hunt up somebody who is conversant with our language, and capable of giving them some kind of interpretation, and in this way keep in touch with your humble servant and what he has to say in these Home papers.

May God bless this little story, and help many another brother and sister to heed that closing little text, "O ye of little faith! wherefore didst thou doubt?"

* One of the pleasantest acquaintances of my life was a young man in Cuba who knew as little of English as I knew of Spanish; yet we had the A B C book and also took GLEANINGS. We went off on a trip, and were alone together the greater part of the day except the A B C, which he carried along. How we did laugh and "chatter! The Holy Spirit, which filled both our hearts (for he was a young convert), bridged over the lack of a language common to both of us.

THE VOICE OF THE PEOPLE TRIUMPHANT OVER THE PRESIDENT'S VETO.

We clip the following from the front page of that godly paper, *The Union Signal:*

GREATEST NATIONAL PROHIBITION VICTORY EVER WON.

The veto of President Taft of the Kenyon-Webb bill has been overridden by both houses of Congress. On February 28, the Senate, by a vote of 63 to 21, repassed the measure, and, on March 1, the House of Representatives, by a vote of 244 to 95, took similar action.

When the news came of the victory I said, "May God be praised for having heard and answered our prayers;" but the following from that same front page of *The Union Signal* expresses my feelings so much better I give it also:

I thank God I have lived to see the day when the representatives of the American people will answer

on the roll call with their votes, the entreaties and imploring prayers of millions of country-serving, God-fearing, home-loving men and women. This day, O men, we who hold high station can dedicate one vote to liberty, country, God, and home, and rededicate the Constitution to the people, and withraw it for ever as a bulwark for that conglomeration of cormorants whod ebauch manhood, slaughter womanhood, butcher childhood, and crucify babyhood on the cross of alcohol.—*Representative Roddenberry, of Georgia.*

God grant this may be only the beginning of "overriding" the voice of one man who happens to fill a great office; and may it prove a lesson and a check on these same "great men" who presume to ignore the demands of righteousness.

High-pressure Gardening

Whatsoever a man soweth, that shall be also reap. —GAL. 6:7.

Dear friends, I believe that Mrs. Root has never given any thing, at least direct, to the columns of GLEANINGS; but I am going to give something that I got very straight from her just a short time ago. You may be a little surprised to know that her first talk is going to be on "high-pressure gardening." It came about in this way: A few days ago she went over to visit our near neighbors, Mr. Keller's people. Mr. Keller had just harvested a very fine crop of celery, and in going up to their home she passed very near the celery-field that had lately been cleared off. She noticed on the way quite a number of large fine stalks of a dark-green kind of celery that seemed to have been skipped and left standing in the field. When she got into the house, one of the first things was to inquire why these great beautiful roots of celery were left when the rest was all taken away. Mrs. Keller informed her that they were a sort of sport that didn't bleach out like the rest; and, as a rule, they were not worth taking care of, and so were allowed to stand in the field and go to waste. She said, furthermore, there had been considerable trouble in getting *seed* that would produce new French Golden Self-blanching celery without any sport or admixture of this dark green and comparatively worthless sort. In fact, one man, I think he was a newcomer, or, at least, new to the celery business, procured some seed that he supposed was all right, and planted several acres; but when it came harvest time so much of it was of this green variety that the crop was practically worthless—not worth harvesting, in fact. The poor fellow put up with his disappointment the best he could, cleared off his celery, and planted tomatoes. This, of course, was a year ago. When his tomatoes came to bear they were little bits of things, not larger than walnuts, and, in fact, he secured nothing, or practically nothing, worth harvesting in his whole field of tomatoes of several acres. As he had procured his celery seed and tomato seed of one and the same firm he applied to them for redress from his expensive loss. They, however, disclaimed all responsibility, and referred him to the clause in their catalog as follows:

While we exercise great care to have all seeds, bulbs, and plants pure and reliable, we do not give any warranty, express or implied. If the purchaser does not accept the goods on these terms and conditions, they must be returned at once, and the money that has been paid for the same will be returned. We can not afford knowingly to sell seeds doubtful as to vitality or purity. We test our seeds before sending out, and should they prove defective in germination or purity when properly planted and cultivated we will refill the order free or refund the price paid.

When she told me about it, I said, "Oh! that man wasn't posted." He ought not to have undertaken it—at least, he ought not to have undertaken to grow *celery* by the acre without having more practical experience. He should have purchased his celery seed the year before he wanted to use it, and then planted a small area, and, if the seed grew satisfactorily, use the same seed to grow his plants the next year, and the same with tomato seeds. He shouldn't have thought of setting tomato-plants by the acre until the seed had been thoroughly tested the year previous, and until he *knew* it was exactly what he wanted.

I gave her this advice thinking that *I* was able to supply a great amount of wisdom, and that, if they had only applied to *me*, how much could have been saved.

After dictating the foregoing I concluded that I had better go over and see my good neighbor Rood, who has several acres of beautiful celery almost ready for market, and his celery seems to be comparatively free from these worthless sports of green stalks. Now, just listen.

Practically speaking, it *is* true that "whatsoever a man soweth, that also he may reap;" but Mr. Rood, I am very glad to say, was able to give me a piece of information that makes it possible to grow a crop very much *better* than the seed which was sown. So it isn't always true that "whatsoever a man soweth he shall *surely* reap." Now, while giving you this great secret in regard to growing celery, and perhaps many other crops, I am going to illus-

trate another point that I have long had in mind; and that is, that people coming down here from the North, and thinking that they can help out in the garden or fields, and earn fair wages—say wages comparing favorably with our expert colored men—such people are usually greatly mistaken in their estimate of their own powers. Now, here is the important feature. First, get the very best seed you can buy. Mr. Rood has been buying seed from several great seedsmen of the North for years; and, as a rule, when he pays the price for their very best seed—say $15 or $20 a pound for the kind of celery seed that is sown here in Florida—he is pretty sure of a fair grade of seed. I asked him if he had any objections to my giving the names of the seedsmen who furnished him his seed. He replied something like this: "Mr. Root, the man or seedsman who furnished me the best celery seed a year ago may not be able to furnish some equally good this year, and *vice versa;* but I will tell you what we do. When the little plants in the seed-bed have got big enough to distinguish clearly between the true and the green or worthless plants, we have expert colored men go through the seed-beds and weed out all of these objectionable plants. In that way, even if our seed is comparatively bad we can get almost a perfect stand of the genuine French Golden Self-blanching celery.

Now, here comes in the point I am speaking of. A year ago a white man came down from the North and applied for work in the gardens. He supposed, of course, that he could do any thing that the colored men did about as well as and perhaps a little better than what they did. So Mr. Rood set him to work, after explaining carefully what was to be done in weeding out the objectionable celery-plants. The man worked, I believe, one day or a part of a day, and perhaps was disappointed in regard to the amount of pay he received. Mr. Rood said he would have saved fully *$10.00* if he had let the experienced colored men stick to their job instead of giving this man a chance to work in the garden even a part of a day. Therefore, take great care, not only in regard to the seed you sow, but in regard to the plants you set out in the field *after* they are grown in the seed-bed.

Most of the celery seed used in this region is imported from France. I asked Mr. Rood if it wasn't possible for us to grow as good seed here in America as they get imported. He said that so far it didn't seem possible to get as good seed grown here, although California has given us some celery seed that compares well with the best French imported. Since then I notice our new seed catalogs advertise California seed, and declare it is as free as any of the French from the worthless green sports.

Since dictating the above I have interviewed my neighbor, Mr. Keller. Let me explain a little. Mr. Keller had not been as successful a celery-grower as my neighbor Rood and some others. During the past summer, however, he spent quite a little time and money in getting proper tiles and thoroughly underdraining his piece of about two acres; and the result is, he has had very much better success than he has ever had heretofore. Even our Florida sand needs thorough underdraining to get the best results, especially after such an extremely wet season as we had in 1912. Well, he sold his celery for $2.40 a box. As nearly as we could figure it, he got about $1200 for the celery on a single acre; but I suggested that he had to pay freight out of this, and he said, "Not at all." A New York man came and looked at his celery, and made him an offer and paid him spot cash right there on the ground at $2.40 a box. When I asked about the fertilizer, he said that the fertilizer cost him perhaps a little over $100 an acre. But what does this amount to when the crop is sold right on the ground for $1200?

My neighbor Rood is just now harvesting the finest crop of celery he ever grew. He, also, most thoroughly underdrained his land before he commenced growing celery; and the quality of his celery is considerably ahead of that of neighbor Keller, and he probably gets better prices than those mentioned. He said that he applied about three tons per acre of a fertilizer that cost about $40.00 a ton; but I think some of his land would give a yield of very close to $2000 per acre.

Let me digress right here to answer a great number of inquiries as to how much a man can make to come down here and grow celery, grapefruit, etc. Now, I can't answer such questions. And I might safely say the man who asks it will rarely be able to make any great result. It takes a practiced expert to grow celery; and I think likely it takes a practical expert to grow grapefruit also; and these men who have learned the knack usually make a good thing of it year after year; but it doesn't follow at all that a green hand, or somebody who has failed in almost every thing else, can come down here and "get rich" growing stuff in Florida. Let me give you an illustration.

Another neighbor, who is fairly successful with truck gardening, last year did so

poorly in growing celery that he started this year to give it up, and he has been working out by the day at painting, his regular trade. As a consequence of the terrible freeze in California this year, celery, oranges, grapefruit, and many other things are "way up" in price. If this neighbor of mine, who became discouraged, and gave it up, had kept right on growing celery he would be out of debt now, and perhaps had money in the bank. You can see from this that the successful gardener must take the seasons, conditions, etc., as they come. Sometimes he hits it just right, and again he doesn't; and the proper way for him is to keep right on at his chosen occupation, and he will eventually succeed.

Just a word more in regard to this choice celery seed. I see this seed quoted in the catalogs all the way from 15 to 25 dollars per pound; and very likely the best is the cheapest. What does the cost of the seed amount to when the crop sells for something like between one and two thousand dollars per acre?

SOMETHING ABOUT APPLES.

My first package by parcel post was three enormous and delicious apples, sent by Stark Bros. Nurseries and Orchard Co., Louisiana, Mo., by the request of our good friend S. W. Morrison.

I asked Stark Brothers to send you specimens of Stark's Delicious. I have eaten them for four years and pronounce it the best winter apple in the world; good from Feb. 1 to April 1.

Oxford, Col., Jan. 20. DR. S. W. MORRISON.

There were three apples in the package sent by Mr. M., of immense size, and they are certainly "delicious"—at least the one I sampled was. If there was any fault with it, perhaps it was rather too much on the sweet order for my taste. Stark Bros. tell us that the tree is a very thrifty grower, and bears at an unusually early age. The apples came to me just a little after New Year's day; and in order to test their keeping I am holding two of them yet. Although we have had the warmest spell, perhaps, during the month of January here in Florida for years past, the two remaining apples are keeping, up to this date, Mar. 3, in perfect order, while other good apples in the same box all decay. It seems to me if all that is said in regard to this most beautiful and luscious apple is true it certainly is an acquisition indeed. We may well call it one of God's new and greatest gifts to the children of men. The apple is so large that one of them makes a large "supper" indeed for myself. The trees are offered at the very reasonable price of only 40 cts. each by the single tree. When they are ordered by the tens or hundreds the price is quite reasonable indeed. We are hoping that parcel post may do great things in the way of furnishing an apple-loving people with an abundance of apples at a reasonable price, making a short cut from the producer, where apples are often allowed to go to waste because there is no paying market for them, to the consumer, and especially the children. The *Rural New-Yorker* has been for years talking about more apples and *better* apples for the health of our people, and I believe they have started what has been called the "Apple Consumers' League." May God be praised for our beautiful luscious and health-giving apples that now *ought* to be in great plenty all over the face of the earth. Especially let us try to make it possible for the growing children to have all the apples they care for, without stint and without extravagant price.

Here is something additional in regard to the Delicious apple, clipped from the *Rural New-Yorker:*

Next to the King David stood a tree of the Delicious, of the same age, and it bore just two specimens. This is no great disparagement, however, for I know the Delicious to be a heavy bearer, and the tree is beautiful in its vigorous growth, with clean bark and strong shapely top. A friend who has several trees tells me that they are regular bearers, and that he has customers who make him special offers of $6.00 per barrel for their private family use. So far as I can learn the Delicious will take its place as a permanent addition to our standard lists, though the assertion that its quality is unexcelled by any other apple requires modifying. I have seen people of cultured taste who, when not told the variety they were testing give it second place to Stayman Winesap. Both kinds were fine specimens from Pacific-slope orchards.

DASHEEN AT BROOKSVILLE, FLA.; FROM BROOKSVILLE BOARD OF TRADE.

Mr. A. I. Root:—Your favor of February 1 to Mrs. R. J. Crather, of this place, has been referred to the undersigned for answer, and in reply thereto I will say that we take great pleasure in giving you some data concerning what we regard as the most remarkable root vegetable in this country.

About eight years ago the Department of Agriculture, Washington, D. C., began experiments in propagating the dasheen. They had discovered it in Japan, where it was considered more popular than either the Irish or sweet potato. The Japanese had imported it from Trinidad Island, north of South America; and, although they had never propagated it to any great extent, yet the best families of Japan were cultivating it in patches not more than fifteen feet square.

When the experts of the Department of Agriculture discovered that the dasheen contains about ten per cent more starch, and from *fifty to seventy* per cent more protein than the potato, they concluded that it was worth trying. Some of the tubers were brought to Washington and propagated under hot-house methods, where the results were favorable, and the tuber was then given a trial in various States, including Maryland, North Carolina, South Carolina, and others, and northern Florida, but without satisfactory results, as they could not make a good tuber.

The department was about to abandon the propagation of dasheens when Dr. Hood, of Orange City, Fla., suggested that the dasheen be given a trial in the *Brooksville* hammock-land district. That was three years ago. They began here on the government farm with twenty-four varieties secured from Japan, Trinidad Island, Porto Rico, and Cuba. The results were more than satisfactory. The second year, by advertising in many foreign countries they increased the number of varieties to fifty-eight, and this year they had *one hundred and seventy-four*. Out of all these the department found five or six varieties which they considered of especial value as human food.

This year they had seven acres planted in dasheens, that had been tested for two years, and the yield was over *3500 bushels*. The Department distributed the edible sizes to various hotels in the North and East, and the seed sizes all over the southern States, so as to give everybody a chance to try them; but we do not expect favorable results from any locality outside of southern Florida, and that, too, on heavy hammock land. In northern Florida and States north, the seasons are too short, as it requires about eight months for the dasheen to mature.

The tests made here in both hammock and pine land show that the hammock land yields from 500 to 800 bushels per acre, while on pine land the tuber can not be raised on a commercial basis at all. The Department, therefore, has made arrangements to have quite a large acreage planted here this year so as to be able to take care of the demands for next winter.

As to the qualities of dasheens, they are most remarkable. After being planted they do not come through the ground for about three weeks; but if banked up with sand when they come up, they can be blanched the same as celery, and will grow from twelve to fourteen inches high *in as many days*. Remove the sand and cut the tender tips, and they may be used instead of asparagus tips or mushrooms. This product has been tested at the New Willard hotel, Washington, the chef of which declares that they are superior to either asparagus tips or mushrooms. It will make eight growths of this kind every season—one growth every twelve days. After the last cutting for this purpose, and the tips get to be from three to four feet tall, the stalks can be used instead of rhubarb or pie plant for pie-filler, and are better than rhubarb in the absence of any acridity or acidity. Certain varieties may be grown for greens which may be made from the leaves minus the ribs.

Now as to the tubers. They may be served in any style that potatoes, either Irish or sweet, may. At the base of the plant is a large tuber called a corm. This corm is too large to be served as an edible on the table, but may be sliced, evaporated, and ground up into flour. Of this flour can be made any thing that can be made of wheat or rye flour, such as bread, doughnuts, cakes, or pie crust; in fact, you can make the crust out of the flour, and make the filling of the pie out of the stalk or the rhubarb.

Dr. Hood, of Orange City, states that, served as pancakes, they are superior in every respect. He has found that persons suffering with indigestion can eat three or four dasheen pancakes, whereas half of one of the other kind of pancakes would cause pain.

The dasheen is very popular in Brooksville and vicinity. A year ago we opened the Varnada hotel with a dasheen banquet. There were one hundred guests present, and every one of them testified that the dasheen was superior to any thing ever eaten in that line. Since then we have had served by Mr. Gomme, superintendent of the government farm here, an entire meal made of dasheens and its various by-products.

Being rich in starch and protein the dasheen may be used for stock feed. In fact, both hogs and cattle will eat the tuber before they will eat any other kind of root vegetable, and they grow fat more rapidly on dasheens than on any other kind of vegetable. If they should never make any thing of the dasheen for human food it would be worth the cost of propagation for cattle and hog feed alone.

The prospects are that we shall have from 35 to 50 acres planted in dasheens this year in Brooksville section; and as the government has released four varieties which they have tested, there will be several parties here with a sufficient amount of dasheens to supply any probable demand the coming year.

You will note that we have indicated a use for every part of the dasheen, stalk and tuber, excepting the ribs of the leaves, which must be removed when they are used for greens; but the department at Washington has discovered that there may be distilled from the leaves a very rare fluid, something like that distilled from the century plant, which is known as "punkha."

From tests being made now, the best chefs of the best hotels in the large cities, and also by several scientific men, we are encouraged to believe that the dasheen has a great future; and it has already replaced the Irish and sweet potato in many homes in this district.

Trusting this information may be of benefit to you, and soliciting your further correspondence in case you desire any further information along this line, we remain Yours very truly,

BROOKSVILLE BOARD OF TRADE,
per C. H. Freas, Sec.

Brooksville, Fla., Feb. 11.

My dasheens are now coming up, and some of them are putting out the second leaves. They very much resemble, so far, a calla lily, and are now (March 1) growing very rapidly.

MORE ABOUT DASHEEN.

Experiments have been conducted with the dasheen, both in Washington and Brooksville, which demonstrate that it is a most wonderful vegetable, capable of furnishing the raw material for a great variety of dishes. As the new growths come through the ground the stalks may be blanched like celery, and cooked and served as mushrooms and asparagus tips. Later the leaves of certain varieties, minus the ribs, may be served as greens, and the stalks as sauce and pie filling, which are said to be superior to rhubarb for those purposes. Thus the entire stalk and leaf, excepting the ribs, yield food for man; and even the ribs of the plant are not valueless, for from their juices may be distilled a most precious liquor known in local parlance as aroid punch, but to the men of science as something akin to the liquor obtained from the century plant.

Brooksville people have been favored with several packages of Mr. Spawn's evaporated products and his flour, especially the dasheen flour, the raw material of which is produced in Brooksville, and they will welcome the announcement that this place is scheduled to become the home of a plant similar to the one at Kissimmee.

As the experts of the Department of Agriculture, Washington, D. C., are conducting experiments which will determine the relative value of the dasheen as a food product, and since the crop here, comprising eleven acres, is still under their supervision, those who have never participated at a dasheen banquet will be compelled to accept amateur statistics and data on this subject until experts choose to publish the scientific facts.—*Tampa Tribune.*

Poultry Department

FORTY-EIGHT CHICKS FROM FIFTY EGGS IN A FIFTY-EGG INCUBATOR.

Some of the friends in times past have called me a bungler with poultry. I think it was the friend, however, whose scheme or "system" had been exposed. Well, I have been a bungler, and I don't know but I am a bungler somewhat yet; but this morning, this 11th day of February, 1913, I have taken forty-eight good strong chicks from fifty fertile eggs. Now, I might make it a little better than that, I think, when I explain that, in testing the eggs, there was one of the fifty that I threw out as doubtful. Let me tell you how I mark eggs that are doubtful. I just put a cross on the large end. If, after further testing, however, I found these crossed eggs are fertile after all, I put a circle around the cross, and that means the cross reads "naught" or "nothing." You may wonder how I get fifty fertile eggs in a fifty-egg incubator. I do it this way: For the first three days I stand them on the small end. In this way I can get sixty or sixty-one eggs in the average fifty-egg incubator. Of course, during the first three days these eggs can't be rolled around very much, as they stand on the small end. I think I have explained before that in this way I manage to have fifty fertile eggs, as a rule, to fill a fifty-egg incubator. Now, this report doesn't amount to very much unless I can do it again, and can show some of the rest of you how to manage to get equally good hatches. I am not sure that I can do this; but I can tell you briefly how I manage. It comes up like this—to *whom* or *where* does the credit belong? Is it to the man who furnished the incubator, or is it because of the favorable season, or because I have taken pains to have my eggs well and strongly fertilized? or has your humble servant some credit in the matter? I have explained before how I gave two males to my forty-eight laying hens. I told you when I started down to Florida that I was going to use an electric incubator; but when I got here I found out they hadn't got around to giving us a current for the whole twenty-four hours, so the electric incubator couldn't be used until somewhere near the first of February. As I didn't want to lose so much time I sent for one of the $7.00 fifty-egg incubators made by the Buckeye Incubator Co., of Springfield, Ohio. I have taken out three hatches this winter with this machine before the one that has just now given such excellent results. I followed exactly the directions that came with the machine, with the exception of letting the chickens all remain in the machine until the 22d day. I removed them just after dinner from the machine on the 21st day. They commenced coming out on the 20th, so that a greater part of them were nearly or quite twenty-four hours old when I took them out of the incubator. My reason for removing them a little sooner is this. Every time I take off a hatch I find a great quantity of fuzzy down, that has rubbed off from the chickens, down among the eggshells in the incubator. Sometimes there will be a good double handful of this down (especially where there is a large hatch) down in the botoom of the incubator. Now, I figure this must be somewhat of a loss, because chickens, especially when taken from the hot incubator, and placed right out almost in the open air, as I do here in Florida, need every bit of their feathery down to protect them from the breeze and the weather. As they seemed quite restless, and evidently in want of more air, I decided to take them out, as I told you, on the afternoon of the 21st day. Well, after taking out forty-four I discoverd there were four more that were hardly ready to come out. One of them was just out of the shell, and three more were only partly out. One of the shells was just pipped. I dipped these partly hatched eggs in water about as hot as I could bear it with my hand, and then put them back in the incubator on a wet cloth wrung out. This was to supply what moisture or dampness was lost when the incubator door was opened. Now, I haven't very much faith in helping chickens out of their shells, although in one of my hatches I helped two out that seemed so feeble and in such bad shape that I had no hopes that they would ever live, or amount to any thing if they did live. However, I did the best I could with them, washing off the glue that had dried on to them with hot water, then putting them back in the incubator, and awaiting developments until next morning. The next morning they had improved so greatly that I kept them a little longer, and finally put them out with the rest of the hatch, intending to keep watch and put them back in the incubator if necessary. To my great surprise, however, after twenty-four hours had passed I had great difficulty in finding the two chickens that I helped out of the shells, and since then I have never been able to tell one from another. They are all just alike. This was a thirty-six chick hatch, and they are all alive and well now, just three weeks since they came out of the shell.

Now, as two of the chickens seemed to be

making very slow progress in breaking out of the shell in this last hatch, I struck on a plan that I believe will be found to be one of the best, if not *the* best, for chickens that do not succeed in getting out at the time the others do. I simply crush the shells with my fingers in such a way as to crack the outer shell pretty thoroughly. In the course of a few hours I had the pleasure of seeing those chickens out of the shell and on their feet. Some one may suggest that getting chickens hatched and bringing them to maturity is a different thing. But I want to tell you that I haven't lost a chick that I know of this winter, except six that were carried off by hawks before I found out exactly where my chickens were going. The hawk has been fenced out by covering my two small yards for the smallest chickens with three-inch poultry netting, as I have explained. Since then not a chicken has been lost. Every chick that is hatched goes right along without a break.

COUNTING CHICKENS "AFTER" THEY ARE HATCHED.

A good deal has been said about counting your chickens *before* they are hatched; but, so far as I know, not very much about counting them *after* they are hatched. Some of our readers, and perhaps not a few of them, have had some trying experience in trying to count them after they are hatched, and having the count hold out. When I started our convergent poultry-yard I thought I was going to have a "dead open and shut" on keeping my chicks, especially in keeping them free of loss from rats, skunks, coons, etc. I have told you something about the poor fertility of our eggs when I first moved them over to our home. There were two troubles about the fertility. First, most of the hens are just out of the moult, and the rooster himself was going around destitute of tail feathers. Secondly, he had toward fifty hens in his care. One of these hatches at this time gave only sixteen chickens in a fifty-egg incubator. Now, there would not have been even *sixteen* had I not helped two of them out of the shells. These two were such dilapidated-looking specimens that I had very little hope they would live. I put them back in the incubator (mostly because I hated to kill the poor little things), and kept them there twenty-four hours. Then when I put them in the fireless brooder, and they moped around about twenty-four hours more, I felt *sure* they were going to die. However, greatly to my surprise, on the third day they began to pick up, and in less than a week I could not tell which were the ones *I* hatched from the others. With these new poultry-yards so well protected with inch-mesh netting I felt sure no rats nor skunks could in any manner interfere with my chickens; and this little brood got on very well until they were about two weeks old, when one day I was obliged to admit that there were only *fifteen* instead of sixteen. Next day there were only fourteen, and so on, until a chicken a day was going *somewhere.* They counted all right at night, and they counted all right next morning; but when night came there would be a chicken missing. Wesley suggested it was a hawk; but I hadn't seen any hawks around, and I was very much puzzled and worried about it. Finally, Wesley caught a hawk right in the act, and made him let the chicken drop. The poor fellow, however, was so badly scared he died a few hours afterward. I finally declared I was going to do something to have a "dead open and shut" on a *hawk* as well as a dead open and shut on the rats and skunks. The question was, how to do it. Neighbor Abbott said he got rid of the hawks by shooting them with a gun. Now, this was a lot of trouble, and I don't like to use guns any way; and, besides that, you must keep on shooting day after day, and year after year. You never can tell when you have got *all* of the hawks. Two or three years ago, when the hawks started I invested in some three-inch-mesh poultry-neting, declaring that I was going to have covered yards for my small chickens, at least until they were old enough to keep out of the way of the hawks. Now, I don't like penning up chickens in small yards. Let me explain a little.

From the next hatch from my fifty-egg incubator, after the one I have mentioned, I secured thirty-six live chicks from fifty eggs. Well, these got along all right until they were about ten days old. Then there was one little bunty chicken that went around, or stood around, with its wings hanging down. You probably have seen them under like circumstances. I tried giving such chicks extra care, bread and milk, etc.; but so far it has been mostly a failure. Now, these thirty-six had been kept inside the brood-house until they were ten days old, because I feared the hawks that had been making such havoc with my other flock. Finally we got to work and covered two little yards overhead with three-inch netting. I think these little yards are about 40 feet square. In this yard that was covered overhead to keep out the hawks I opened the door and let my thirty-six chicks loose. This one with its wings drooping didn't seem inclined to go outdoors. Feel-

ing pretty sure he would die any way, I took and tossed him out.

Well, pretty soon the rest of the thirty-six had unearthed a lot of crickets that were under the dried-up hay and rubbish, chasing each other about the yard to see whom the crickets belonged to. This wakened up my droopy chick, and he got in the run with the rest. By night he was greatly improved. The next day he picked up still more. Now, instead of "going dead," it is a hard matter for me to tell which is the sick one from the rest. This chick, in my opinion, was dying because he didn't have sufficient sunlight and sufficient outdoor exercise, nor, perhaps, the variety of food that chickens need at this age, although we had been giving him chick food, a mash, beef scrap, charcoal, grit, and every thing recommended, at least every thing that is rationally recommended. Now, my opinion is from much careful observation that thousands of chicks are dying continually by too much artificial heat and too little outdoor sunshine and exercise.* My chickens, when ten days old, will chase each other about the yard at a temperature below 50, and it doesn't seem to hurt them a particle.

This covered yard I have mentioned is open on the south side up as high as your head. Of course, there is an inch-mesh fence along the ground, which goes down into the ground to keep out the rats. Above this there are two or three feet where a hawk could easily fly in if he felt so inclined. Well, I left this opening on purpose, hoping some hawk would fly in and couldn't get out, and then I would have him captured and help save some of the neighbors' chickens as well as my own.

Some of you may suggest that it is quite an expense to cover a yard, even if it is only forty feet square. To which I reply it is something of an expense to spend time and money for feed in raising chickens until they are half grown, and letting a hawk carry them off; and not only an expense, but think of the discouraged feeling that comes to one after having taken so much pains and care to nurse chickens through bad weather and then have them carried off in this way. It dampens my spirits and spoils my enthusiasm for the whole chicken business; but when I can succeed in getting things so arranged that every chicken that comes out of the incubator gets to be a big live useful fowl, then I feel some animation and enthusiasm to go ahead. As yet I have no netting over my yard for young ducks. The hawks seem to have taken no notice of the ducks so far. I have seen in an advertisemeut of Indian Runner ducks that hawks never molest them. I wonder if this can be true. Speaking about Indian Runner ducks, I have just this morning brought in seventeen eggs from eighteen laying ducks. *You* may have had as good results as this from eighteen chickens, but I certainly never have before. Of course, I haven't had seventeen eggs every day; but they have been running from twelve to fifteen and sixteen for quite a little time. So far the Indian Runner ducks are better layers than any chickens I ever had any thing to do with. In regard to the eggs for table use, after having tested them repeatedly I greatly prefer a boiled duck egg to a boiled hen's egg. They certainly are richer in quality, and there is ever so much *more* in one of these big duck eggs. Let me repeat again, if you want lots of duck eggs, and good-sized ones, you must give them an abundance of feed. Our ducks now have soaked corn right before them, not only all night but all day long. After having taken a swim and a run down the canal, perhaps half a mile or more, they come back toward noon, or perhaps a little after noon, and go for their tub of corn (which is up close to the convergent poultry-yard) as if they really enjoyed the fun. After having had about a dozen dips into this tub of corn, and a drink of water to go with it, they go on a lively run for the canal again. Now, you may say it is quite an expense, especially with the price corn brings down here in Florida, to keep corn before the ducks, letting them take it at their own pleasure; but, as I said in regard to the celery business, what does the cost of a little corn amount to compared with the quantity of eggs I have mentioned, especially when the eggs also bring 30 cents a dozen, and that is what we are getting for them? Four duck eggs will bring ten cents, and I think ten cents will pay for all the corn that the whole flock of twenty-two (that is, including four drakes) consume in twenty-four hours. Of course, I am fortunate in having this canal that they can run to so constantly.

By the way, when I let them out in the morning, after their eggs are laid, I notice that they make a hurried run for the puddles that are left during the night on account of the rising and falling of the tide. Fortunately, the tide, when it is up high, comes clear up on to the canal adjoining my

* I am fully persuaded there are thousands of people just like this chick. They are dying, and don't know it, for lack of outdoor air and sunshine, and *something to do*. Let them wake up, get out and search all outdoors for "God's gifts," then "get busy" distributing these gifts to poor hardworking and poorly paid humanity, and they will promptly *get well* like the droopy chick.

premises. Then when it goes down again there are numerous puddles left in the hollow cavities of the coral rocks. These puddles contain little fish and other salt-water animal life. Just the other morning a duck ran out on the bank with something too large for her to handle. After having tried in vain to break it in two in order to swallow it I discovered that she had quite a good-sized flat fish, something like what they call in the North a sunfish. From this I infer that they get a good many little fishes by going up and down the stream every morning. Now, wherever it is possible to have access to a running stream, especially where the ducks will not annoy or interfere with the neighbors in any way, it certainly is a very desirable place to grow Indian Runner ducks. Where you have such a stream on your own farm or your own premises you are doubly fortunate. I think we may safely include the Indian Runner ducks with another of God's most precious gifts to his children. It certainly furnishes a very healthful form of animal food, and, so far as I can see, at a very reasonable price indeed. I have never heard any complaint from my ducks' eggs as articles of food. It seems to me that the quality is very much better for having the abundance of corn that they do every day. They are really "corn-fed" duck eggs. Our grocers, however, mix the duck eggs right in with the hens' eggs, saying that they have no complaint, and they don't discover any difference. Some of their customers, to my knowledge, pick out the duck eggs on account of their greater size. You certainly get more eggs for your money when duck eggs can be purchased at the same price than where you buy hens' eggs.

I want to say something more about lettuce. Young ducks, if they have access to plenty of head lettuce, will take it very largely in preference to grain, and it is a great saving. Ours are making a most astonishing growth, and a great part of their feed is lettuce from the fields around among our neighbors. Not a duckling has been lost so far, and, so far as my experience goes, I should say that they are easier to raise than chickens.

Just a word about the hawk. When I saw in the poultry journals that a couple of guineas in the poultry would be a great preventive against depredation by hawks, I sent clear up to Pennsylvania for a couple of Pearl guineas. They are just here, and I greatly enjoy watching the queer antics of these strange birds. The guineas are the greatest flyers of any thing I have seen in the line of domestic fowls. They will rise almost straight up as high as the tree-tops, and do it apparently with the greatest ease. The male bird, the very first morning, gave presuming roosters and hens all to understand in a very few moments that *he* was "lord of the domain;" but when it was once settled by unanimous consent, he was pleasant and friendly.

"FENCING OFF" THE HAWKS.

It is now Feb. 5, and it seems my plan of leaving a part of the south side of the covered yard partly open did not work, for we found another dead chicken, with a wound under its wing about the size of a half-dollar. Wesley thinks that, after the hawk killed the fowl it was unable to carry it off because it was so big. This is the third one we have found lacerated under the wing in about the same way. Two were in the yard, and one when Wesley made him drop the chicken in the field. We have now enclosed these two yards *on all sides* as well as overhead, and we hope it will end the depredation from hawks. Covered yards—that is, if they are of any size—are rather expensive, it is true; but these yards are necessary only for chicks, say under four or six weeks of age; and, once made, they should last a good many years.

CHUFAS IN NEW YORK STATE, ETC.

Dear Friend Root:—I have noted quite a number of items in GLEANINGS relative to chufas, or earth almonds. I grew many of them in years past while in the poultry business, and know the yield from them is immense. I never measured or estimated the amount grown on my plots, but am positive the yield was very far above 100 bushels per acre. I have counted 600 fine large chufas on a single hill, besides many small ones. I grew the finest chufas on black muck soil. Even when planted close, they made big bulging hills filled with fine nuts. When ripe I would lift the hills with a fork, the roots and nuts staying together in a compact mass. If I wished to save any for seed and other uses I would pulverize the hills, and sift out the dirt and wash the nuts and dry them, which was an easy matter.

Most of the chufas I grew for my poultry, and always believed them marvelous egg-producers. For winter use I would store the hills in a dry place, and every day throw out a lot of the clumps for the hens to work over. It just did one's heart good to see the biddies scratch and dig the hills to pieces, and ravenously devour every nut. It did my heart even more good to see how they would shell out the eggs. Here was exercise and rich hearty food in abundance—the two things most essential for winter laying hens. The cost of harvesting the nuts in this manner for the hens was negligible, and they went very far in the saving of expensive food. It certainly is a wonder that these valuable nuts are not extensively grown by poultry-keepers. I should be pleased to hear from others on the subject.

Hyde Park, N. Y., Dec. 14. A. T. COOK.

Please send me a copy of Mr. Terry's health book. Don't let me miss a single copy of GLEANINGS. Each copy is a welcome and appreciated volume of love and instruction.

Tabor, Iowa. H. W. PARKISON.